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Education Indicators in Canada: Handbook for the Report of the Pan-Canadian Education Indicators Program

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. not available for any reference period
.. not available for a specific reference period
... not applicable
0 true zero or a value rounded to zero
0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p} preliminary
^{r} revised
x suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E} use with caution
F too unreliable to be published
* significantly different from reference category ($p < 0.05$)

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Introduction

This handbook updates the general descriptions for the indicators of the Pan-Canadian Education Indicators Program (PCEIP) as new sets of tables are released. It is a reference document that gives readers a broad understanding of each indicator, rather than the very specific methodological descriptions that would be necessary to reproduce the indicator using the raw data.

The PCEIP tables highlight the most recent data available for five broad indicator sets:

1. A portrait of the school-age population
2. Financing education systems
3. Elementary and secondary education
4. Postsecondary education
5. Transitions and outcomes.

The following information forms the main body of the Handbook, and is presented for each of the PCEIP indicators:

- A brief, general description.
- The major concepts and definitions used.
- An overview of the methodology.
- A short review of any major data limitations, including interjurisdictional comparability as needed.
- The data source(s) used to produce the indicator.

The relevant data tables are cited for the reader's information.

An appendix that presents the structure of education and training in Canada concludes the Handbook.

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Acronyms and abbreviations

BTSD – basic training for skill development
CANSIM – Canadian Socio-economic Information Management System
CAUBO – Canadian Association of University Business Officers
CCSIS – Community College Student Information System
CEGEP – Collège d'enseignement général et professionnel
CES – Centre for Education Statistics
CESC – Canadian Education Statistics Council
CFI – Canada Foundation for Innovation
CIHR – Canadian Institutes of Health Research
CIP – Classification of Instructional Programs
CMA – census metropolitan area
CMEC – Council of Ministers of Education, Canada
CPI – Consumer Price Index
CV – coefficient of variation
EAG – Education at a Glance
ESES – Elementary-Secondary Education Survey (formerly ESESP - Elementary-Secondary Education Statistics Project)
FINCOL – Financial Statistics of Community Colleges and Vocational Schools
FIUC – Financial Information of Universities and Colleges Survey
FOG – Follow-up Survey of Graduates
FTE – full-time equivalent
GERD – gross domestic expenditures on research and development
GDP – gross domestic product
GED – general education diploma
HRSDC – Human Resources and Skills Development Canada
IALSS – International Adult Literacy and Skills Survey
ICT – information and communication technologies
ILO – International Labour Organisation
INES – Indicators of Educational Systems
ISCED – International Standard Classification of Education
JRT – job readiness training
LFS – Labour Force Survey
LICO – low-income cutoff
NGS – National Graduates Survey
NHS – National Household Survey
NSERC – Natural Sciences and Engineering Research Council of Canada
NLSCY – National Longitudinal Survey of Children and Youth
OECD – Organisation for Economic Co-operation and Development
OAC – Ontario Academic Credits
PCAP – Pan-Canadian Assessment Program
PCEIP – Pan-Canadian Education Indicators Program
PIAAC – Programme for the International Assessment of Adult Competencies
PISA – Programme for International Student Assessment
PPVT-R – Peabody Picture Vocabulary Test-Revised

PSIS – Postsecondary Student Information System
R&D – research and development
RAIS – Registered Apprenticeship Information System
SAIP – School Achievement Indicators Program
SCF – Survey of Consumer Finances
SCI – Survey of Colleges and Institutes
SHS – Survey of Household Spending
SLID – Survey of Labour and Income Dynamics
SSGS – Secondary School Graduates Survey
SSHRC – Social Sciences and Humanities Research Council of Canada
TLAC – Tuition and Living Accommodation Costs for Full-time Students at Canadian Degree-granting Institutions
UCASS – University and College Academic Staff System
YITS – Youth in Transition Survey

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Section A: A portrait of the school-age population

A1. Population with Aboriginal identity

Tables A.1.2.1 and A.1.2.2

Overall, Indicator A1, Population size, provides information on the school-age population in Canada. This sub-indicator provides estimates and projections of the population aged 0 to 29 with Aboriginal identity, as well as the proportion of the total Canadian population with Aboriginal identity, by age group, for Canada and for the provinces/territories (Table A.1.2.1 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tbla1.2.1-eng.htm) and (Table A.1.2.2 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tbla1.2.2-eng.htm)).

Concepts and definitions

- For the indicator on population size, the **school-age population** refers to all individuals aged 5 to 24, whether or not they were attending school. The estimates and projections presented for the population with Aboriginal identity also include the pre-school-age population (aged 0 to 4), as well as the population aged 25 to 29. Data are presented for the following age groups: 0 to 29 overall; 0 to 4, 5 to 14, 15 to 19, 20 to 24, and 25 to 29.
- The **Aboriginal identity** population refers to individuals who, on the 2011 National Household Survey, said they were First Nations, Métis or Inuit, and/or were a Treaty Indian or Registered Indian as defined by the *Indian Act of Canada*, and/or were members of an Indian band or First Nation. [1]
- Population **estimates** represent the number of people who reported Aboriginal identity in the 2011 National Household Survey adjusted for census undercount and partially enumerated reserves.
- A **population projection** refers to the future population size resulting from a set of assumptions regarding the demographic and non-demographic components of growth. These assumptions consider the populations at both the outset of the projections and the future evolution of the components likely to affect the size and composition of the populations. For the Aboriginal population, assumptions were grouped together in a limited number of **scenarios** designed to show what would happen in the coming years if the underlying assumptions were proven correct.
- Projections are presented for 2016, 2021, 2026, 2031 and 2036, for five scenarios (see the "Methodology" section).
- **Fertility** refers to the demographic phenomenon in relation to live births, which can be considered from the point of view of women, the couple and occasionally men.
- **Ethnic mobility** is "the phenomenon by which individuals and families change their ethnic affiliation." [2] Ethnic mobility has two components: intragenerational and intergenerational. [3]
- **Intergenerational** ethnic mobility results from a change in ethnic affiliation between parents and their children, with the parent(s) not having the same ethnic affiliation as the child(ren).
- **Intragenerational** ethnic mobility results from a change in an individual's ethnic affiliation over time.
- **Net undercoverage** represents the difference between the number of persons who were covered by the Census of Population, but who were not enumerated (undercoverage) and the number of persons who were enumerated when they should not have been, or who were enumerated more than once (overcoverage).
- **Microsimulation**, unlike population estimates and projections done using the cohort component method, simulates the demographic destiny of individuals one by one. The method is based on multiple random drawing at the individual level rather than on aggregated data applied at the population group level.

Methodology

- The projections for this sub-indicator were provided by the Demosim team in the Demographic Analysis and Projections Section of Demography Division at Statistics Canada. The population estimates presented for 2011 represent the number of people who reported Aboriginal identity in the 2011 National Household Survey, adjusted to take into account net undercoverage in the census by age, sex, and province/territory, and incompletely enumerated reserves.
- The microdata file for the 2011 National Household Survey also serves as the base population for projections of populations according to Aboriginal identity to 2036.
- The Demosim microsimulation population projections model was used to develop the projections for both the Aboriginal and non-Aboriginal populations shown in Table A.1.2.1 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tbla1.2.1-eng.htm) and Table A.1.2.2 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tbla1.2.2-eng.htm) . Assumptions for the Aboriginal and Non-Aboriginal population are from Scenarios 1, 2, 3, 4 and 5 of the *Projections of the Aboriginal Population and Households in Canada, 2011 to 2036* (www.statcan.gc.ca/pub/91-552-x/91-552-x2015001-eng.htm) , Statistics Canada Catalogue no. 91-552.

Table 1
Projections for the five scenarios

	Scenario 1	**Scenario 2**	**Scenario 3**	**Scenario 4**	**Scenario 5**
Assumptions regarding Aboriginal peoples	Constant ethnic mobility and complete converging of fertility	Constant ethnic mobility and half converging fertility	Constant ethnic mobility and fertility	No ethnic mobility and complete converging fertility	No internal migration, constant ethnic mobility, and complete convergence of fertility
Fertility	Converging: complete decrease in the gap between the Aboriginal and non-Aboriginal populations.	Converging: decrease of 50% in the gap between the Aboriginal and non-Aboriginal populations.	Constant level [1] and maintenance of the gap in fertility between Aboriginal and non-Aboriginal populations	Converging: complete decrease in the gap between the Aboriginal and non-Aboriginal populations.	
Intragenerational ethnic mobility	Constant ethnic mobility based on 1996-to-2011 levels.			No intragenerational ethnic mobility [2]	Constant ethnic mobility based on 1996-to-2011 levels.
Intergenerational ethnic mobility	Constant, based on 2011 NHS.				
Intergenerational transmission of registered Indian status and registration category (including mixed unions)	Constant, based on 2011 NHS with a continuation of the 2001-2011 trends as to mixed unions.				
Mortality	Moderate increase in life expectancy and maintenance of the gap between the Aboriginal and non-Aboriginal populations.				
International migration	Zero international net migration for Aboriginal population.				
Internal migration	Patterns of constant migration at the 2001, 2006 and 2011 levels.				
Registration on the Indian Register and reclassification of registration category over an individual's lifetime	Late registrations: constant rates; C-31 [3] registrations: 4,300 registrations and progressive decline until 2036; C-3 [4] registrations: 40,200 registrations until 2020; Qalipu [5] registrations: 23,700 registrations until 2013; 6(2) to 6(1) reclassifications under C-3: 18,200 reclassifications until 2020; Other reclassifications from 6(2) to 6(1): constant rates.				
Education	A progressive levelling off of trends, and constant graduation gaps between the sub-groups that comprise the population.				
Assumptions regarding non-Aboriginal peoples	**Scenario 1**	**Scenario 2**	**Scenario 3**	**Scenario 4**	**Scenario 5**
	Constant ethnic mobility and complete converging of fertility	Constant ethnic mobility and half converging fertility	Constant ethnic mobility and fertility	No ethnic mobility and complete converging fertility	No internal migration, constant ethnic mobility, and complete convergence of fertility
Fertility	An average fertility rate that reaches 1.67 children per woman at the national level in 2021, and the gaps between the projected groups are maintained.				
Mortality	A moderate increase in life expectancy, and constant mortality gaps between the sub-groups that comprise the population.				
Immigration	A constant immigration rate at 7.5 per thousand, with the composition by country of birth being representative of the immigration observed during the period from 2006 to 2011.				
Emigration	A total emigration rate constant at the 2002/2003 to 2011/2012 level and constant emigration gaps between the subgroups that comprise the population.				
Internal migration	Patterns of constant migration at the 2001, 2006 and 2011 levels.				No internal migration.

1 In 2010/2011, the total fertility rate was estimated at approximately 2.7 children for women of Inuit identity, 2.4 for those with First Nations identity, and 1.8 for women of Métis identity, compared with 1.6 for non-Aboriginal women.

2 In other words, within the Canadian-born, non-Aboriginal population, any persons likely to report Aboriginal identity had already done so prior to 2011.

3 Modifications of 1985 to the Indian Act.

4 The Gender Equity in Indian Registration Act.

5 Legal recognition of the Qalipu Mi'kmaq First Nation.

Limitations

- The population reporting an Aboriginal identity should not be confused with the population reporting Aboriginal ancestry. The latter concept refers to the ethnic or cultural group of a person's ancestors, but it does not mean that the person identifies with the Aboriginal group to which his/her ancestors belonged.[4]
- Although commonly used for planning purposes, population projections should be interpreted with caution as they are based on assumptions about the future course of demographic components.

Data sources

- National Household Survey, 2011, Statistics Canada.
- Special tabulations provided by the Demosim team in the Demographic Microsimulation Section of Demography Division, Statistics Canada.
- *Projections of the Aboriginal Population and Households in Canada, 2011 to 2036* (www.statcan.gc.ca/pub/91-552-x/91-552-x2015001-eng.htm) , Statistics Canada Catalogue no. 91-552.

A2 Cultural diversity

Tables A.2.1, A.2.2, A.2.3, A.2.4 and A.2.5

Indicator A2 portrays the diversity of the school-age population in some of Canada's major census metropolitan areas (CMAs) in terms of immigrants (Table A.2.1 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbla2.1-eng.htm)), visible minorities (Table A.2.2 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbla2.2-eng.htm)) and language spoken at home (Table A.2.3 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbla2.3-eng.htm)). It also traces shifts in the proportion of the school-age population with Aboriginal identity (Table A.2.4 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbla2.4-eng.htm) and Table A.2.5 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbla2.5-eng.htm)).

Concepts and definitions

- For this indicator, the **school-age population** refers to all individuals aged 5 to 24, whether or not they are attending school. The following **age groups**, which align with the standard used by the Organisation for Economic Cooperation and Development (OECD) and Statistics Canada, have been adopted for PCEIP: 5 to 14; 15 to 19; 20 to 24; and 25 to 29.
- **Immigrant** refers to a person who is or has ever been a landed immigrant/permanent resident. This person has been granted the right to live in Canada permanently by immigration authorities. Some immigrants have resided in Canada for a number of years, while others have arrived recently. Some immigrants are Canadian citizens, while others are not. Most immigrants are born outside Canada, but a small number are born in Canada. In the 2011 National Household Survey, 'Immigrants' includes immigrants who landed in Canada prior to May 10, 2011.
- **Visible minority** refers to whether a person belongs to a visible minority group as defined by the *Employment Equity Act* and, if so, the visible minority group to which the person belongs. The *Employment Equity Act* defines visible minorities as 'persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour.' The visible minority population consists mainly of the following groups: South Asian, Chinese, Black, Filipino, Latin American, Arab, Southeast Asian, West Asian, Korean and Japanese.
- **Home language** refers to the language spoken most often or on a regular basis at home by the individual on May 10, 2011. Readers will find a complete analysis of factors affecting comparability of language results between the censuses in the publication, Methodological Document on the 2011 Census Language Data, Catalogue no. 98-314-X2011051.

- **Aboriginal identity** refers to whether the person reported being an Aboriginal person, that is, First Nations (North American Indian), Métis or Inuk (Inuit) and/or being a Registered or Treaty Indian (that is, registered under the *Indian Act* of Canada) and/or being a member of a First Nation or Indian band. Aboriginal peoples of Canada are defined in the *Constitution Act, 1982*, section 35 (2) as including the Indian, Inuit and Métis peoples of Canada.
  Aboriginal identity includes the Aboriginal groups (First Nations (North American Indian), Métis or Inuk (Inuit)), multiple Aboriginal identities and Aboriginal responses not included elsewhere.
  Some Indian reserves and settlements did not participate in the 2011 National Household Survey (NHS) as enumeration was either not permitted, it was interrupted before completion, or because of natural events (e.g., forest fires). These reserves are referred to as 'incompletely enumerated reserves.' There were 36 reserves out of 863 inhabited reserves in the 2011 NHS that were incompletely enumerated. Data for these 36 Indian reserves and Indian settlements are not included in the 2011 NHS tabulations. As a result, some estimates in this document may be underestimated for First Nations people. Please refer to the reference document entitled *Aboriginal Peoples Reference Guide, National Household Survey*, Catalogue no. 99-011-X2011006, for more information on these exclusions.
- A **census metropolitan area (CMA)** or a census agglomeration (CA) is formed by one or more adjacent municipalities centred on a population centre (known as the core). A CMA must have a total population of at least 100,000 of which 50,000 or more must live in the core. A CA must have a core population of at least 10,000. To be included in the CMA or CA, other adjacent municipalities must have a high degree of integration with the core, as measured by commuting flows derived from previous census place of work data.
  If the population of the core of a CA declines below 10,000, the CA is retired. However, once an area becomes a CMA, it is retained as a CMA even if its total population declines below 100,000 or the population of its core falls below 50,000. Small population centres with a population count of less than 10,000 are called fringe. All areas inside the CMA or CA that are not population centres are rural areas.

Methodology

- The proportion of the school-age population with particular characteristics is based on information reported in the 2011 National Household Survey (NHS) for immigrants, visible minorities, and Aboriginal identity, and the Census of Population for home language.
- The proportion of the school-age population with characteristic y = (number of individuals aged 5 to 24 with characteristic y) / (number of individuals aged 5 to 24).

Limitations

- PCEIP reports separate Canada-level indicators for people who self-identify as North American Indian, Métis or Inuit. Although this grouping lends itself to more detailed analyses of the Aboriginal population in Canada than a broad pan-Canadian grouping, it does not capture the entire picture. For instance, the grouping does not differentiate between Aboriginal people living in urban versus rural or isolated communities, or between Aboriginal people residing on/off reserves and Aboriginal people from these diverse settings may have very different opportunities, needs and aspirations. Separate Aboriginal indicators for each of the 10 provinces and three territories are also reported; again, the variations within jurisdictions may not be captured completely.
- When comparing estimates from the 2006 Census long form and estimates from the 2011 National Household Survey (NHS) users should take into account the fact that the two sources represent different populations. The target population for the 2006 Census long form includes usual residents in collective dwellings and persons living abroad whereas the target population for the NHS excludes them. Moreover, the NHS estimates are derived from a voluntary survey and are therefore subject to potentially higher non response error than those derived from the 2006 Census long form.

Data source

- 2011 National Household Survey, Statistics Canada.
- 2011 Census of Population, Statistics Canada.

A3 Low income

Tables A.3.1.1 to A.3.1.3 and Table A.3.2

Indicator **A3** provides information on the proportion of the population aged 0 to 24 living in low-income circumstances. The percentage of 0- to 24-year-olds in low income situations is presented by age group and type of living arrangement (Table A.3.1.1 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tbla3.1.1-eng.htm) , Table A.3.1.2 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tbla3.1.2-eng.htm) and Table A.3.1.3 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tbla3.1.3-eng.htm)). The length of time the individuals aged 5 to 24 have been living in such situations is presented in Table A.3.2 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tbla3.2-eng.htm) . These data are presented for Canada and the provinces.

Concepts and definitions

- This indicator refers to the pre-school as well as the **school-age population** and includes all individuals aged 0 to 24, whether or not they are attending school. The following **age groups** have been adopted for PCEIP: 0 to 4, 5 to 19 and 20 to 24.
- Two **living arrangements** are presented for the population aged 0 to 4 in low-income circumstances: living with two parents or living with a lone parent. For the population 5 to 24, three types of living arrangements are presented: living with two parents, living with a lone parent, and not living with any parent.
- The distribution of the population aged 5 to 24 by **number of years in low income** is categorized as follows: never in low income, up to one year in low income, and more than one year in low income.
- **Parents** captures biological and step-parents, as well as those who have adopted children. **Lone parent** refers to guardians and adults, regardless of marital status, without a partner but with children in their care.
- **Low income** is determined using Statistics Canada's **low-income cutoffs (LICOs)**, which indicate when a family may be in "straitened circumstances." This means that the family is likely to spend 20% more of its net income on basic items such as food, shelter and clothing than the average family, which leaves less money available for other expenses such as health, education, transportation and recreation. LICOs are calculated for families and communities of different sizes.

Methodology

- Data for this indicator are drawn primarily from the **Survey of Labour and Income Dynamics (SLID)**, an important source for income data for Canadian families, households and individuals. Introduced in 1993, SLID provides an added dimension to traditional surveys on labour market activity and income: the changes experienced by individuals and families through time. In 1998, SLID officially replaced the annual Survey of Consumer Finances (SCF) as the main source of information on family income.
- After-tax low-income cut-offs (LICOs), which better reflect the income a family has to spend on basic and other items, were used to report the percentage of children living in low-income families and the distribution by number of years in low income. LICOs are updated annually to reflect increases in the cost of living. They are also updated periodically to reflect changes in family spending patterns.
- Low-income rates are calculated for families with all members of an economic family having the same low-income status. An economic family is defined as a group of two or more persons related by blood, marriage, common-law or adoption, who live in the same dwelling.

Limitations

- There is no internationally accepted standard for measuring "poverty", nor is there an official definition of poverty in Canada. LICOs provide one of many possible measures to monitor trends in the relative economic well-being of Canadian families.
- The Survey of Labour and Income Dynamics (SLID) was designed to follow individuals for six years; therefore, the income of a given family may be estimated for a maximum of six consecutive years using data from SLID.
- The feasibility of developing low income indicators for the Aboriginal population using SLID was explored. However, the Aboriginal identifier variable used in SLID is not comparable with that used in the census or in the Labour Force Survey (LFS). The identifier used in SLID is based on Aboriginal ancestry and Treaty/Registered Indian status, while the identifier used in the census and the LFS is based on Aboriginal self-identification. Moreover, the sample size of Aboriginal children aged 5 to 24 in low income in Canada is too small to support a breakdown by family characteristics and by province. And, most importantly, SLID is not recommended by subject matter experts in the Social and Aboriginal Statistics Division at Statistics Canada as a reliable source of information on the Aboriginal population.

Data sources

- Survey of Consumer Finances, Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3502.
- Survey of Labour and Income Dynamics, Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3889.

A4 Family background

Tables A.4.1 through A.4.4

Indicator A4 examines the living arrangements of the school-age population and the working status of parents. Distributions are presented for the total school-age population (Table A.4.1 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbla4.1-eng.htm) and Table A.4.2 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbla4.2-eng.htm)) and the school-age population with Aboriginal identity (Table A.4.3 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbla4.3-eng.htm) and Table A.4.4 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbla4.4-eng.htm)).

Concepts and definitions

- For this indicator, the **school-age population** refers to all individuals aged 5 to 24, whether or not they are attending school. The following **age groups**, which align with the standard used by the Organisation for Economic Co-operation and Development (OECD) and Statistics Canada, are used: 5 to 14; 15 to 19; 20 to 24; and 25 to 29.
- The 5- to 24-year-old population was grouped into the following categories to reflect **living arrangements**: living with parents(s), which includes married parents, common-law parents, and lone parents; and not living with parents, which captures those individuals living as part of a couple or lone parent, or who have other living arrangements.
- **Parents** captures biological, same sex and step-parents, as well as those who have adopted children. **Lone parent** refers to guardians and adults, regardless of marital status, without a partner but with children in their care. "Other living arrangements" includes people who live with "non-family" persons; that is, people living with relatives only, living with relatives and other persons, or living with non-relatives (at least two of these non-relatives must constitute a census family). Parents also refers to grandparents when there are no parents present in the household.
- Percentage distributions are presented for the 5-to-24 age group overall, and for the following **age groups**: 5 to 14, 15 to 19, and 20 to 24.
- The Census of Population definition of **family** refers to a married couple (with or without children of either or both spouses), a couple living common-law (with or without children of either or both partners) or a lone parent of any marital status, with at least one child living in the same dwelling. A **married couple** or a couple living common-law may be of the opposite or same sex. "**Children**" in a census family include grandchildren living with their grandparent(s) but with no parent(s) present.
- There were several significant changes that were made to the **census family** concept beginning in the 2001 Census: two persons living in a same-sex common-law relationship, along with any of their children residing in the household will be considered a census family. Children in a census family can have been previously married (as long as they are not currently living with a spouse or common-law partner); previously, they had to be never-married. A grandchild living in a three-generation household where the parent (middle generation) is never-married will, contrary to previous censuses, now be considered as a child in the census family of his or her parent, provided the grandchild is not living with his or her own spouse, common-law partner, or child. Traditionally, the census family usually consisted of the two older generations. A grandchild of another household member, where a middle-generation parent is not present, will now be considered as a child in the census family of his or her grandparent, provided the grandchild is not living with his or her own spouse, common-law partner, or child. Traditionally, such a grandchild would not be considered as the member of a census family.
- In Table A.4.1: *Distribution of the school-age population, by age group and living arrangements, Canada and jurisdictions, 2006 and 2011* (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbla4.1-eng.htm) , children living with **same sex married parents** are grouped together with those living with same sex common-in –law parents to be consistent with the definitions used in the 2006 Census. Therefore, in this table, the category of children living with "common-law- parents" include those of opposite sex common-law, same sex common-law and same sex married parents. It is important to note that the data in this table are not comparable to the data in Table A.4.3: *Distribution of the population aged 5 to 24 with Aboriginal identity, by age group and living arrangements, Canada, 2011* (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbla4.3-eng.htm) where children living with same sex married parents

are grouped together with those living with married parents to be consistent with the definitions used in the 2011 National Household Survey (NHS).

- **Aboriginal identity** refers to whether the person reported being an Aboriginal person, that is, First Nations (North American Indian), Métis or Inuk (Inuit) and/or being a Registered or Treaty Indian (that is, registered under the Indian Act of Canada) and/or being a member of a First Nation or Indian band. Aboriginal peoples of Canada are defined in the Constitution Act, 1982, section 35 (2) as including the Indian, Inuit and Métis peoples of Canada.
- **"Total Aboriginal identity"** includes Aboriginal group (i.e., whether the person reported being an Aboriginal person, that is, First Nations (North American Indian), Métis, or Inuk(Inuit)), multiple Aboriginal identities and Aboriginal responses not included elsewhere.

Methodology

- The percentage distribution of the school-age population, by age group and living arrangements, was examined for the total Canadian population (Table A.4.1 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbla4.1-eng.htm) and Table A.4.2 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbla4.2-eng.htm)), and for the school-age population with Aboriginal identity (Table A.4.3 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbla4.3-eng.htm) and Table A.4.4 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbla4.4-eng.htm)).
- To ensure the confidentiality of responses collected for the census, a random rounding process is used to alter the values reported for individual counts. As a result, when data are summed or grouped, the total value may not match the sum of the individual values, since the total and subtotals are independently and randomly rounded. However, apart from discrepancies due to simple rounding, the percentages were calculated to add up to 100%, as recommended by the census methodology group.

Limitations

- PCEIP reports separate Canada-level indicators for people who self-identify as North American Indian, Métis or Inuit. Although this grouping lends itself to more detailed analyses of the Aboriginal population in Canada than a broad pan-Canadian grouping, it does not capture the entire picture. For instance, the grouping does not differentiate between Aboriginal people living in urban versus rural or isolated communities, or between Aboriginal people residing on/off reserves and Aboriginal people from these diverse settings may have very different opportunities, needs and aspirations.
- Some Indian reserves and settlements did not participate in the 2011 National Household Survey (NHS) as enumeration was either not permitted, it was interrupted before completion, or because of natural events (e.g., forest fires). These reserves are referred to as 'incompletely enumerated reserves.' There were 36 reserves out of 863 inhabited reserves in the 2011 NHS that were incompletely enumerated. Data for these 36 Indian reserves and Indian settlements are not included in the 2011 NHS tabulations. As a result, some estimates in this document may be underestimated for First Nations people. Please refer to the reference document entitled *Aboriginal Peoples Reference Guide*, National Household Survey, Catalogue no. 99-011-X2011006, for more information on these exclusions.
- When comparing the census results to other Statistics Canada sources, it appears that there is some over-estimation of persons aged 15, 16 and 17 who are counted as married, common-law, separated, divorced or widowed, rather than never married (single). For further information, please consult the *Families Reference Guide, 2011 Census*.
- There is some variability of the counts in each census of people aged 20 to 24 due to the possibility that students are being reported at their college location instead of at their parents' home (which is recommended). Please see "Living Arrangements of Young Adults aged 20 to 29", a *Census in Brief* by Anne Milan.
- When comparing estimates from the 2006 Census long form and estimates from the 2011 National Household Survey (NHS) users should take into account the fact that the two sources represent different populations. The target population for the 2006 Census long form includes usual residents in collective dwellings and persons living abroad whereas the target population for the NHS excludes them. Moreover, the NHS estimates are derived from a voluntary survey and are therefore subject to potentially higher non response error than those derived from the 2006 Census long form.

Data source

2006 and 2011 Census of Population, 2011 National Household Survey (NHS), Statistics Canada.

Notes

1 The "Concepts and definitions" used in this handbook section on the population with Aboriginal identity are cited or adapted from the Glossary entries in the 2015 Statistics Canada report Projections of the Aboriginal Population and Households in Canada, 2011 to 2036 (www.statcan.gc.ca/pub/91-552-x/91-552-x2015001-eng.htm) (catalogue number 91-552), prepared by Jean-Dominique Morency, Éric Caron-Malenfant, Simon Coulombe and Stéphanie Langlois.

2 Guimond, Éric. 2003. "Fuzzy Definitions and Population Explosion: Changing Identities of Aboriginal Groups in Canada", in Newhouse, D. and Peters, E. J., editors, *Not strangers in these parts: Urban Aboriginal peoples*, Policy Research Initiative, Government of Canada.

3 Boucher, Alexandre, Norbert Robitaille and Éric Guimond. 2009. "La mobilité ethnique intergénérationnelle des enfants de moins de 5 ans chez les populations autochtones, Canada, 1996 et 2001" , in *Cahiers québécois de démographie*, volume 38, no. 2.

4 As stated in the Glossary entries in the 2015 Statistics Canada report Projections of the Aboriginal Population and Households in Canada, 2011 to 2036 (www.statcan.gc.ca/pub/91-552-x/91-552-x2015001-eng.htm) (catalogue number 91-552), prepared by Jean-Dominique Morency, Éric Caron-Malenfant, Simon Coulombe and Stéphanie Langlois.

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Section B: Financing education systems

B2 Average university tuition fees

Tables B.2.9 and B.2.11

This subset of Indicator **B2** includes data on average undergraduate and graduate university tuition fees, over time, in current dollars, at the Canada level and by province (Table B.2.9 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tblb2.9-eng.htm)) and by field of study (Table B.2.11 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tblb2.11-eng.htm)). These tables are based on data from the Tuition and Living Accommodation Costs (TLAC) survey which covers the academic year (eight months).

Concepts and definitions

- Average **university tuition fees** represent the tuition fees charged to full-time Canadian students over the academic year; that is, September to April. International students are not included. Average tuition fees for graduate studies (Master's and doctorates) are also presented. These average tuition fees do not include additional compulsory fees such as those for athletics, health services and student associations.
- The **fields of study** classification for **undergraduate** and **graduate programs** are adapted from the Classification of Instructional Programs (CIP), Statistics Canada's standard. The average tuition amounts for both types of programs are presented ranked from highest to lowest, based on the most recent year of data.
- Information is presented for the following 17 fields of study in both undergraduate and graduate programs: agriculture, natural resources and conservation; architecture and related services; business, management and public administration; dentistry; education; engineering; humanities; law, legal professions and study; mathematics, computer and information sciences; medicine; nursing; other health, parks, recreation and fitness; pharmacy; physical and life sciences and technologies; social and behavioural sciences; veterinary medicine; and visual and performing arts, and communications technologies.
- The graduate programs also include Master of Business Administration (MBA) programs; specifically, Regular MBA and Executive MBA.
- All tuition fee amounts are presented in **current dollars**. To convert the current dollar amounts to constant dollar amounts for comparison over time, it is suggested that the September Consumer Price Index corresponding with the beginning of the university academic year (September to August) be used. For the index and further details on converting, see Table F.1.4 (www.statcan.gc.ca/pub/81-582-x/2014001/tbl/tblf1.4-eng.htm) .

Methodology

- The Tuition and Living Accommodation Costs (TLAC) survey collects data for full-time students at Canadian degree-granting institutions that are publicly funded. The survey was developed to provide an overview of tuition and additional compulsory fees, and living accommodation costs that students can expect to pay for an academic year.
- The target population of TLAC is all degree-granting institutions (universities and colleges) in Canada. The survey is a census with a cross-sectional design. Data are collected for all units of the target population; therefore, no sampling is done.
- A major redesign of the Tuition and Living Accommodation Costs (TLAC) questionnaire was implemented for the 2007/2008 collection cycle, to include the standard coding structure for fields of study based on the Classification of Instructional Programs (CIP). Executive MBA and Regular MBA, previously included in the "Business, management and public administration" category were presented independently under the graduate programs; this change had a

substantial impact. In 2010/2011, MBA programs were excluded from the national and provincial weighted averages to eliminate the impact of the high cost of these programs on the overall tuition fee averages for graduate programs.

- Using the most current enrolment data available, average tuition fees have been weighted by the number of students enrolled by institution and field of study.
- As of 1998/1999, Quebec weighted averages include the different tuition fees paid by "in-province" and "out-of-province" Canadian students. As of 2007/2008, Nova Scotia weighted averages include the different tuition fees paid by in-province and out-of-province Canadian students. In Ontario, the undergraduate weighted averages are calculated using the average of the lower and upper tuition values including enrolments by field of study. All other provinces except for Nova Scotia and Quebec use the lower tuition values including enrolments by field of study to calculate undergraduate weighted averages. Graduate weighted averages are calculated using the average of the lower and upper tuition fees including enrolments.
- All surveys are subject to errors. Only non-sampling errors apply to this survey given that no sampling process was used to produce the final results. Each year, data comparability is performed for each university and college, and any major discrepancies are investigated with the respondent. Tuition fee data is available at the provincial level and by province and field of study in CANSIM. Tuition fees at the institutional level are available through Client Services upon request and for a fee; these are the raw data reported by each institution.

Limitations

- Since the distribution of enrolment across various programs varies from period to period, caution should be exercised when making historical comparisons.

Data source

- Survey of Tuition and Living Accommodation Costs (TLAC), Statistics Canada. For more information consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3123.

University revenues

Table B.2.12

This subset of Indicator **B2** presents the percentage distribution of university revenues, by source, at the Canada and provincial levels (Table B.2.12 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tblb2.12-eng.htm)). Amounts are presented in current dollars, for the financial year.

Concepts and definitions

- **Government revenues** at universities captures grants and contracts from government departments and agencies at the federal, provincial, municipal, and foreign levels.
- The **federal** portion of income is mainly from six major federal government agencies: the Social Sciences and Humanities Research Council of Canada (SSHRC), Health Canada (HC), the Natural Sciences and Engineering Research Council of Canada (NSERC), the Canadian Institutes of Health Research (CIHR), the Canada Foundation for Innovation (CFI), and Canada Research Chairs. Grants and contracts from all other federal government departments and agencies are also included.
- Grants and contracts at the **provincial** level include: income from provincial government departments and agencies, including provincial CFI matching grants; and provincial CFI matching income from the ministry responsible for the institution. "Income from other provinces," which includes grants from, and contracts with, provinces other than the province with jurisdiction, is also included.
- Grants from urban transit, communication and parking authorities are examples of income from **municipal** governments.
- Income from **foreign nations** includes grants from the National Endowment for Humanities, the National Institutes of Health, and the National Science Foundation.
- **Private revenues** at universities refer to those obtained from any source other than government, categorized as:
    - **Student fees:** Payments obtained from students directly in the form of tuition (credit and non-credit courses) and other fees.
    - **Non-government grants and contracts, donations and bequests:** Financial support received by colleges and universities from donors, bequests from wills, and contracts from sources other than government, the latter

provided with specific stipulations.

- **Sales:** Institution revenue from sales of services and products.
- **Investment:** Revenue from dividends, bonds, mortgages, short-term notes, and bank interest. Includes the "Endowment" fund, a restricted fund (primarily donations), which cannot be spent. Investment income generated by endowments may be used for various purposes, which are often restricted by donors.
- **Miscellaneous:** Commissions, royalties, and fees from the use of institution-owned rights or properties, fees for services rendered, library and other similar fines, rentals, net gain or loss on the sale of fixed assets, and any type of revenue not identified under other forms of revenue.

Methodology

- Data were drawn from the **Financial Information of Universities and Colleges Survey (FIUC)**, which was developed to provide financial information (income and expenditures) on all universities and affiliated institutions ("institution" may refer to universities, university-colleges, colleges, institutes and hospitals) in Canada. The survey is a census with a cross-sectional design, and the target population is all degree-granting institutions (universities and colleges) in Canada. Data are collected for all units of the target population; therefore, no sampling is done.
- The collection process for FIUC is conducted using two separate questionnaires:
  1. A questionnaire developed in conjunction with the Canadian Association of University Business Officers (CAUBO) that was designed and implemented by the CAUBO Finance Committee, which comprises financial administrators from six universities. These administrators meet twice a year and any proposed changes to the questionnaire and guidelines are discussed and implemented by the Committee.
  2. A non-CAUBO questionnaire, which is a virtual duplicate of the CAUBO questionnaire. Any modifications to the CAUBO questionnaire or guidelines are applied to the non-CAUBO questionnaire.
- Ontario CAUBO universities report to the province's own collection authorities (Council of Finance Officers — Universities of Ontario [COFO]). This information is sent to Statistics Canada, where a mapping and integration process converts the COFO data into the CAUBO format database.
- In 1999/2000, there was a break in the series, when major changes made to the CAUBO questionnaire and guidelines affected the historical comparability of the data; therefore, 1999/2000 was selected as the basis for comparison. Data from 1999/2000 onwards are comparable as they are based on the same guideline definitions.
- "University-colleges" are part of the FIUC universe made by CAUBO and as such are considered universities.
- Each university (and university-college) returns its questionnaire with accompanying audited financial statements, thus ensuring data accuracy. Nevertheless, each year a data comparability review is done for each institution and any major discrepancies are investigated with the respondent.

Limitations

- Non-CAUBO data are amalgamated with the CAUBO data at the provincial level. Data for non-CAUBO institutions are not released publicly at the institution level. They can only be released at the provincial level.
- Comparisons of financial data over multiple years should be done with caution because of changes in generally accepted accounting principles that could alter the underlying data and changes in the guidelines that govern the reporting of the data.

Data source

- Financial Information of Universities and Colleges Survey, Statistics Canada. For more information, consult "Definitions, data sources and methods," Statistics Canada Web site, survey 3121.

University expenditures

Tables B.2.13 and B.2.14

This subset of Indicator **B2** includes university expenditures by type of expenditure, for Canada and the provinces. Amounts are presented in current dollars (Table B.2.13 (www.statcan.gc.ca/pub/81-582-x/.015001/tbl/tblb2.13-eng.htm)) and percentage distributions (Table B.2.14 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tblb2.14-eng.htm)). Expenditures figures are drawn from multiple sources including financial survey data and institutional financial reports. Some of the data are estimated in order to produce a complete and coherent financial picture.

Concepts and definitions

- The **capital expenditures** category reflects all expenditures on capital assets by universities and is not restricted to those originating in an institution's capital fund. Capital expenditures include: acquisitions of buildings, land, major equipment and furniture; major renovations and alterations; space rental; etc.
- **Operating expenditures** include the following funds: general operating; special purpose and trust; sponsored research; and ancillary enterprises. Such expenditures reflect the items that an institution purchases and consumes within a year, and those the institution purchases on an ongoing basis. Costs directly attributable to instruction such as salaries, instructional aids, administrative support, teacher development, and costs for other educators such as counselors, are included. Operating expenditures refer to:
    - **Compensation**, which includes gross salaries for educators and other staff (before deduction of taxes, contributions for retirement or health care plans, and other contributions or premiums for social insurance or other purposes), plus expenditure on retirement (actual or imputed expenditure by employers or third parties to finance retirement benefits for current educational personnel) and other non-salary compensation (fringe benefits). These statistics on compensation of university staff are categorized as:
        - **Academic salaries** – salaries paid to full- and part-time staff members engaged in instruction and research activities (includes deans, professors, associate professors, assistant professors and lecturers; also includes payments to staff members in the academic ranks for various types of leave such as administrative, academic or sabbatical).
        - **Other salaries and wages** - payments to all full- and part-time non-instructional (support) staff including, among others, technicians, teaching and research laboratory technicians, clerical and secretarial, professional and managerial, janitorial, trades and maintenance. Also includes payments to individuals who may hold an academic rank (or equivalent), but are engaged in activities other than instruction and research.
        - **Benefits** – includes the costs of institutions' contributions (with respect to salaries) for pensions (including payments for actuarial deficiencies and past service liability), group life insurance, salary continuance insurance, dental plans, Workers' Compensation, health taxes, tuition remission, Employment Insurance, and other costs of employee benefit programs. Also includes the cost of benefits paid during early retirement periods, as well as the cost of post-retirement benefits.
- The **other operating expenditures** category includes all non-salary related items such as spending on tuition fees and books, spending attributable to research and development, membership fees include fees paid by the institution to organizations such as AUCC and CAUBO, utilities, school services under contract, building operations and maintenance staff and so on. Other non-salary costs include those related to the maintenance of buildings as well as supplementary costs such as lunch programs and transportation and other expenses not covered elsewhere.

Methodology

- Data were drawn from the **Financial Information of Universities and Colleges Survey (FIUC)**, which was developed to provide financial information (income and expenditures) on all universities and affiliated institutions (institution may refer to universities, university-colleges, colleges, institutes and hospitals) in Canada. The survey is a census with a cross-sectional design, and the target population is all degree-granting institutions (universities and colleges) in Canada. Data are collected for all units of the target population; therefore, no sampling is done.
- The collection process for FIUC is conducted using two separate questionnaires:
    1. A questionnaire developed in conjunction with the Canadian Association of University Business Officers (CAUBO) that was designed and implemented by the CAUBO Finance Committee, which comprises financial administrators from six universities. These administrators meet twice a year and any proposed changes to the questionnaire and guidelines are discussed and implemented by the Committee.
    2. A non-CAUBO questionnaire, which is a virtual duplicate of the CAUBO questionnaire. Any modifications to the CAUBO questionnaire or guidelines are applied to the non-CAUBO questionnaire.
- Ontario CAUBO universities report to the province's own collection authorities (Council of Finance Officers — Universities of Ontario [COFO]). This information is sent to Statistics Canada, where a mapping and integration process converts the COFO data into the CAUBO format database.
- In 1999/2000, there was a break in the series, when major changes were made to the CAUBO questionnaire and guidelines, which affected the historical comparability of the data; therefore, 1999/2000 was selected as the basis for comparison. Data from 1999/2000 onwards are comparable as they are based on the same guideline definitions.
- "University-colleges" are part of the FIUC universe made by CAUBO and as such are considered universities.

- Each university (and university-college) returns its questionnaire with accompanying audited financial statements, thus ensuring data accuracy. Nevertheless, each year a data comparability review is done for each institution and any major discrepancies are investigated with the respondent.
- The percentages presented in Table B.2.14 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tblb2.14-eng.htm) were calculated using the current dollar values for Canada from Table B.2.13 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tblb2.13-eng.htm) .

Limitations

- While considerable effort is made to ensure that universities and colleges are preparing information in accordance with the prescribed guidelines, there are limitations in the comparability of the data because of differences in the underlying accounting practices followed by institutions. Institutional comparisons are subject to interpretation and clarification because of differences such as size, academic programs, structure, physical environment, management philosophy, and budgetary and accounting procedures. Therefore, comparisons of financial data over multiple years should be done with caution.
- When making inter-jurisdictional comparisons, the following should be taken into account: variations in sources of funding; differences in fiscal year-end dates, which can vary from March 31 to June 30, and variations in provincial policies and provincial funding responsibilities.

Data source

- Financial Information of Universities and Colleges Survey (FIUC), Statistics Canada. For more information, consult "Definitions, data sources and methods," Statistics Canada Web site, survey 3121

B3 Student debt

Tables B.3.1 and B.3.2

Indicator **B3** provides data on student debt from government-run student loan programs, for the class of 2009-2010. Using data from the National Graduates Survey (NGS), the tables look at the percentage of students who borrowed and their average debt at graduation (Table B.3.1 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblb3.1-eng.htm)), as well as the incidence and repayment of government student loans among 2009-2010 graduates who did not pursue further postsecondary education (Table B.3.2 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblb3.2-eng.htm)) in Canada and the provinces.

Concepts and definitions

- In the National Graduates Survey (NGS), **graduates** include those who graduated from: university programs leading to bachelors, masters or doctorate degrees or specialized certificates or diplomas; other postsecondary programs such as programs of a one-year duration or longer that normally require secondary school completion or its equivalent for admission in colleges of applied arts and technology, CEGEPs, community colleges, technical schools and similar institutions; and skilled trades programs, which are usually three months or more in duration. This indicator, however, covers only those from university with a bachelor's, master's, or doctorate degree or those from college. The NGS was conducted three years (class of 2009-2010) after graduation.
- **Government student loan programs** include all federal and provincial student lending resources; that is, programs under which provincial and federal governments provide loans to Canadians enrolled in full- or part-time postsecondary education, based on eligibility and need.
- The data in Table B.3.2 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblb3.2-eng.htm) include only 2009-2010 graduates who did not pursue any further postsecondary education program; i.e., a program leading to a diploma, certificate or degree above the high school level that would take three or more months to complete when attending full-time.

Methodology

- Survey information collected from graduates on student loans includes the amounts owed to both federal and provincial student loan programs as well as the amount owed to other sources. Results presented refer to borrowing from government student loan programs only. Borrowing from private sources is not included.

- In Table B.3.1 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblb3.1-eng.htm) , average debt at graduation for 2009-2010 graduates is expressed in current dollars.
- For PCEIP 2015, the data in Table B.3.1 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblb3.1-eng.htm) capture all 2009-2010 graduates who borrowed from government student loan programs and who reported data three years after graduation
- In PCEIP 2015 Table B.3.1 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblb3.1-eng.htm) , the calculation of the average debt at graduation for those who borrowed from government student loan programs includes graduates who had paid off government student loans completely at graduation.
- In Table B.3.2 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblb3.2-eng.htm) , only graduates who still owed at graduation and at three years after graduation are reflected in the average debt numbers. Hence, Table B.3.2 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblb3.2-eng.htm) excludes those who have already paid off their debts by calculating the average debt of only the population still owing at each time period.

Interjurisdictional comparability

- Provincial data refer to the province of study, which may differ from the province of residence three years after graduation. The Canada totals include data for the territories. Separate estimates for the territories were suppressed because of high sampling errors.

Limitations

- The National Graduates Survey (NGS) 2013, class of 2009-2010 was conducted three years after graduation, whereas previous National Graduate Surveys were conducted two years after graduation. While information on graduates at the time of graduation is comparable across cycles, information on graduate's activities at the time of the interview is not directly comparable. For example, labour market outcomes and debt repayment pertain to status three years after graduation for the NGS 2013 compared to two years after graduation for other cycles of NGS.

Data source

- National Graduates Survey, 2009-2010 graduates, Statistics Canada, survey 5012.

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Section C: Elementary-secondary education

C1 Early years and school readiness

Tables C.1.1 and C.1.2

Indicator **C1** assesses the early years and school readiness of 4- and 5-year-old children by examining their health status (including any health limitations), participation in activities, exposure to reading and reading materials (Table C.1.1 (www.statcan.gc.ca/pub/81-582-x/2011001/tbl/tblc1.1-eng.htm)), and their language scores/vocabulary skills (Table C.1.2 (www.statcan.gc.ca/pub/81-582-x/2011001/tbl/tblc1.2-eng.htm)).

Concepts and definitions

- The child's **general health** was classified as: excellent; very good; good; or fair or poor. The categories were read to the adult respondents who answered on behalf of their children in the National Longitudinal Survey of Children and Youth (NLSCY).
- This indicator also considers certain **health limitations** affecting the child. One set of questions asked about the child's day-to-day health and focused on his or her abilities relative to other children of the same age. The adult respondents were told that these same questions would be asked of everyone. This indicator considers the following: difficulty seeing; difficulty hearing; difficulty being understood when speaking; difficulty walking; and pain or discomfort. Pain or discomfort reflects the "no" responses to a question asking if the child is "usually free of pain or discomfort." These questions are part of an index called the Health Utility Index.
- Before being asked about chronic conditions, the adult who was responding on behalf of the child was told that this referred to "conditions that have lasted or are expected to last six months or more and have been diagnosed by a health professional" and was instructed to mark all that apply. This indicator presents information for long-term allergies and long-term bronchitis, as well as asthma. The questions for asthma were asked separately, and the information presented reflects the percentage of children aged 4 or 5 who had ever been diagnosed with asthma, not just those who had had an asthma attack in the 12 months before the survey interview.
- **Weekly physical activities outside of school hours** refers to weekly participation (ranging from most days to about once a week) in: sports that involved a coach or instructor (except dance, gymnastics or martial arts); lessons or instruction in organized physical activities such as dance, gymnastics or martial arts; lessons or instruction in music, art or other non-sport activities; and participation in any clubs, groups or community programs with leadership (for example, Beavers, Sparks or church groups). The adults who responded on behalf of these young children were asked to provide information on the children's physical activities for the 12-month period leading up to the survey interview.
- **Daily reading activities outside of school hours** reflects some of the information obtained from questions about literacy, including how often a parent read aloud to the child or listened to the child read (or try to read). Respondents were also asked how often the child looked at books, magazines, comics, etc. on his/her own, or tried to read on his/her own (at home).
- The **Peabody Picture Vocabulary Test-Revised (PPVT-R)** measures children's receptive vocabulary, which is the vocabulary that is understood by the child when he or she hears the words spoken. It is a "normed" test; that is, a child's performance is scored relative to that of an overall population of children at the same age level as the child. A wide range of scores represents an average level of ability, taking the age of the child into consideration. Scores below the lower threshold of this average range reflect a delayed receptive vocabulary, and scores above the higher threshold demonstrate an advanced receptive vocabulary.

- The PPVT-R is scaled to an average of 100. The range of average receptive vocabulary measured by the PPVT-R covers scores from 85 to 115. A score below 85 is considered to indicate delayed receptive vocabulary; a score above 115, advanced. Scoring is adjusted to reflect the different abilities of 4- and 5-year-olds. English and French scores are assessed separately and are not directly comparable.

Methodology

- The **National Longitudinal Survey of Children and Youth (NLSCY)** is a long-term study of Canadian children that follows their development and well-being from birth to early adulthood. The survey was designed to collect information about factors influencing a child's social, emotional and behavioural development and to monitor the impact of these factors on the child's development over time.
- This indicator is based on nationally representative data for 4- and 5-year-olds from cycle 8 of the NLSCY, which was conducted in 2008/2009.
- The information presented was obtained from the NLSCY child component; specifically, the questions on child health, activities (sports, lessons, clubs, etc.) and literacy. Responses were provided by the person most knowledgeable (PMK) about the child, which is usually the mother.

Limitations

- The NLSCY relies on the perceptions of the adult most familiar with the child to report on the child's general health and development, and such reports may not always be entirely objective or accurate.
- The following are possible sources of non-sampling errors in the NLSCY: response errors due to sensitive questions, poor memory, translated questionnaires, approximate answers, and conditioning bias; non-response errors; and coverage errors.

Data source

- National Longitudinal Survey of Children and Youth (NLSCY), Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 4450.

C2 Elementary-secondary school: enrolments and educators

Tables C.2.4 through C.2.7

Characteristics of the educator work force are captured in Indicator C2 (Table C.2.4, Table C.2.5, Table C.2.6 and Table C.2.7).

Concepts and definitions

Public schools are publicly funded elementary and secondary schools that are operated by school boards or the province or territory. They include all regular publicly funded schools, as well as provincial reformatory or custodial schools and other schools that are recognized and funded by the province or territory.

- **Educators** include all employees in the public schools who belong to one of the three following categories: teachers, school administrators and pedagogical support.
    - ***Teachers*** include personnel involved in direct student instruction in a group or one-on-one basis. They include classroom teachers; special education teachers; specialists (music, physical education); and other teachers who work with students as a whole class in a classroom, in small groups in a resource room, or one-on-one inside or outside a regular classroom, including substitute/supply teachers. Chairpersons of departments who spend the majority of their time teaching and personnel temporarily not at work (e.g. for reasons of illness or injury, maternity or parental leave, holiday or vacation) are reported in this category. It excludes teacher's aides or student teachers as well as other personnel **who do not get paid for their employment**. For **paid** teacher's aides or educational assistants see category "**pedagogical support**" below.
    - ***School administrators*** include all personnel who support the administration and management of the school such as principals, vice-principals and other management staff with similar responsibilities only if they do **not** spend the majority of their time teaching. This category excludes those who are in higher level management; receptionists, secretaries, clerks and other staff who support the administrative activities of the school; and those who are reported under "other than educators".

- ***Pedagogical support** staff* includes professional non-teaching personnel who provide services to students to support their instruction program. It includes educational assistants, **paid** teacher's aides, guidance counselors and librarians. This category excludes those in health and social support who should be reported under "other than educators".

- **Educator headcount** is defined as the number of educators on September 30th (or as close as possible thereafter) of the school year who are responsible for providing services to the students reported in the enrolment headcount tables.

Methodology

- The **Elementary-Secondary Education Survey** (ESES) is a national survey that enables Statistics Canada to provide information on enrolments, graduates, educators and finance of Canadian elementary-secondary public and private educational institutions. It also provides enrolment information for home-schooled students.
- The ESES is an annual survey that collects aggregate data from each provincial/territorial Ministry or Department of Education. The information on enrolments is collected by type of program (regular programs for youth, general programs for adults, and vocational programs for youth and adults), by grade and sex and by age and sex.
- The survey also collects data on secondary school graduates by type of program (regular programs for youth, general programs for adults, and vocational programs for youth and adults), by age and sex.
- Information pertaining to full-time and part-time educators by age group and sex is also collected. Finally, the survey also gathers expenditures data pertaining to level of government (school board and other government) and type of expenditures.

Limitations

- Due to the nature of the Elementary-Secondary Education Survey (ESES) data collection, these data are updated on an ongoing basis and are therefore subject to further revisions.
- Care should be taken with cross-jurisdictional comparisons. The proportion of educators (comprising a mix of teachers, administrators and pedagogical support) differs in each jurisdiction.

Data source

- Elementary-Secondary Education Survey, Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site survey 5102.

C4 Student achievement

Programme for International Student Assessment (PISA)

Tables C.4.2, C.4.4, C.4.5, C.4.10 and C.4.17

Indicator **C4** reports on student achievement in three key areas—reading, mathematics, and science—and looks at changes in results over time. Performance was examined using results from the Programme for International Student Assessment (PISA), an international program of the Organisation for Economic Co-operation and Development (OECD).

This sub-indicator presents detailed information on the performance of 15-year-old students in Canada in the major PISA domain of mathematics, assessed in 2012, by looking at average scores and the distribution of students by proficiency levels on the composite mathematics scale (Table C.4.2 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblc4.2-eng.htm)) and at average scores on the mathematics subscales (Table C.4.17 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblc4.17-eng.htm)). It also compares performance over time in reading (Table C.4.4 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblc4.4-eng.htm)), science (Table C.4.5 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblc4.5-eng.htm)) and mathematics (Table C.4.10 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblc4.10-eng.htm)).

Concepts and definitions

- The **Programme for International Student Assessment (PISA)** is a collaborative effort of member countries of the OECD along with partner countries to regularly assess youth outcomes, using common international tests, for three domains: reading, mathematics, and science. The goal of PISA is to measure students' skills in **reading, mathematics**, and **science** not only in terms of mastery of the school curriculum, but also in terms of the knowledge and skills needed for full participation in society.

- **Reading:** An individual's capacity to understand, reflect on, and engage with written texts, in order to achieve one's goals, to develop one's knowledge and potential and to participate in society.
- **Mathematics:** An individual's capacity to identify and understand the role that mathematics plays in the world, to make well-founded judgments and to use and engage with mathematics in ways that meet the needs of that individual's life as a constructive, concerned and reflective citizen.
- **Science:** An individual's capacity to use scientific knowledge, to identify questions and to draw evidence-based conclusions in order to understand and help make decisions about the natural world and the changes made to it through human activity.

Methodology

- Internationally, around 510,000 students from 65 countries and economies participated in PISA 2009. PISA's target population comprises 15-year-olds who are attending school. In Canada, the student sample is drawn from Canada's 10 provinces; the territories have not participated in PISA to date. The PISA assessments are administered in schools, during regular school hours, in the spring. Students of schools located on Indian reserves were excluded, as were students of schools for those with severe learning disabilities, schools for blind and deaf students, and students who were being home-schooled. In 2012, the PISA assessment was a two-hour paper- and pencil-test. It was administered in English and in French according to the respective school system.
- While all three of the PISA domains are tested in each assessment, only one forms the major domain in each cycle, meaning it includes more assessment items than the others. In each cycle, two-thirds of testing time is devoted to the major domain. Mathematics was the major domain in 2003 and 2012, reading in 2000 and 2009, and science in 2006.
- Results for the major domains are available in a combined domain scale (which represents students' overall performance across all the questions in the assessment for that domain), as well as on the sub-domains that make up each overall scale. As fewer items are tested as part of the minor domains, only combined or overall results are available from PISA.
- In 2012, the mathematics sub-scales refer to three aspects of mathematics——continuous and non-continuous.
    - Mathematics process sub-scales:
        - *Formulating* situations mathematically: being able to recognize and identify opportunities to use mathematics and then provide mathematical structure to a problem presented in some contextualized form by translating it into a mathematical form.
        - *Employing* mathematical concepts, facts, and procedures and reasoning: being able to employ these elements to solve mathematically formulated problems. *Interpreting,* applying, and evaluating mathematical outcomes: being able to reflect upon mathematical solutions, results, or conclusions and interpret them in the context of real-life problems.
    - Mathematics content sub-scales:
        - *Change and relationships* involves the study of temporary and permanent relationships among phenomena, where changes occur within systems of interrelated objects or phenomena when the elements influence one another. This requires understanding of fundamental types of change and recognizing when they occur, in order to use suitable mathematical models to describe and predict change. Mathematically this means modelling the change and relationships with appropriate functions, as well as creating, interpreting, and translating symbolic and graphical representations of relationships. Aspects of the traditional mathematical content of functions and algebra, including symbolic expressions, tables, and graphical representations, are central in describing, modelling, and interpreting change.
        - *Space and Shape* relates to visual phenomena that are encountered everywhere in our world: patterns, properties of objects, positions and orientations, representations of objects, decoding and encoding of visual information, navigation, and dynamic interaction with real shapes and representations. From a curricular and a pedagogical perspective, it is worth noting that concepts of geometry serve as an essential foundation for *Space and Shape*. Mathematical literacy in the area of *Space and Shape* involves a range of activities, such as understanding perspective: for example, perspective is required in painting, creating and reading maps, transforming shapes using technology, interpreting views of three-dimensional scenes from various perspectives, and constructing representations of shapes.
        - *Quantity* incorporates the quantification of phenomena, relationships, situations, and entities in the world; understanding representations of those quantifications; and judging interpretations and arguments based

on quantity. To engage with the quantification of the world involves understanding measurements, counts, indicators, relative size, and numerical trends and patterns. Mathematical literacy in the area of *Quantity* relies heavily on knowledge and processes related to numbers, applied in a wide variety of settings.

- *Uncertainty and Data* involves recognizing the place of variation in processes, having a sense of the quantification of that variation, acknowledging uncertainty and error in measurement, and knowing about chance. In the traditional areas of probability and statistics, it provides means of describing, modelling, and interpreting uncertainty phenomena, and of making inferences. It further includes a knowledge of numbers and certain aspects of algebra, such as graphs and symbolic representation, with a focus on data interpretation and presentation.

- In PISA, student performance is expressed as a number of points on a scale constructed so that the average score for the major domains for students in all participating countries was 500 and its standard deviation was 100. In 2012 the OECD average was 494. This means that overall, across OECD countries, a slight deterioration of mathematical proficiency can be observed over the past nine years. Approximately two-thirds of all students in OECD countries scored between 394 and 594 (i.e., within one standard deviation of the average) on the PISA 2012 assessment. Due to change in performance over time, the OECD average scores in PISA 2012 differ slightly from 500.
- PISA results can also be presented as the distribution of student performance across levels of proficiency. For PISA 2012, the range of difficulty of the tasks is represented by six levels of mathematical proficiency that are aligned with the levels used in describing the outcomes of PISA 2003. The levels range from the lowest, Level 1, to the highest, Level 6. Descriptions of each of these levels have been generated, based on the framework-related cognitive demands imposed by tasks that are located within each level, to describe the kinds of knowledge and skills needed to successfully complete those tasks, and which can then be used as characterisations of the substantive meaning of each level. To help in interpretation, these levels were linked to specific score ranges on the original scale:
    - Below Level 1 (scores lower than or equal to 358 points)
    - Level 1 (scores higher than 358 but lower than or equal to 420 points)
    - Level 2 (scores higher than 420 but lower than or equal to 482 points)
    - Level 3 (scores higher than 482 but lower than or equal to 545 points)
    - Level 4 (scores higher than 545 but lower than or equal 607 points)
    - Level 5 (scores higher than 607 but lower than or equal to 669 points) and
    - Level 6 (scores higher than 669 points).
- According to the OECD, Level 2 can be considered a baseline level of proficiency, at which students begin to demonstrate the mathematical competencies that will enable them to participate effectively and productively in life. Students performing below Level 2 can still accomplish some mathematical tasks successfully, but they lack some fundamental skills that may prepare them to either enter the workforce or pursue postsecondary education.
- When comparing student performance among countries, provinces, or population subgroups, the PISA tables identify statistically significant differences. Statistical significance is determined by mathematical formulas and considers issues such as sampling and measurement errors. Sampling errors relate to the fact that performance was computed from the scores of random samples of students from each country and not from the entire population of students in each country. Consequently, it cannot be said with certainty that a sample average has the same value as a population average that would have been obtained had all 15-year-old students been assessed. Additionally, a degree of error is associated with the scores describing student skills as these scores are estimated based on student responses to test items.
- Standard errors and confidence intervals have been used as the basis for performing comparative statistical tests. The standard error expresses the degree of uncertainty around the survey results associated with sampling and measurement errors. The standard error is used to construct a confidence interval, which indicates the probability that a given error range (given by the standard error) around the sample statistic includes the population number. The PISA survey results are statistically different if the confidence intervals do not overlap. Furthermore, an additional t-test was conducted to confirm statistical difference.
- It is possible to compare changes in student performance over time in each PISA domain because a number of common test questions are used in each survey. However, the limited number of such common test items used increases the chances of measurement error. To account for this, an extra error factor, known as the linking error, is introduced into the standard error. The standard errors with linking errors should be used whenever comparing

performance across assessments (but not when comparing results across countries/economies or subpopulation within a particular assessment).

- This indicator compares the performance of students in the 2012 PISA assessment with the previous major assessments in each domain: reading (Table C.4.4 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblc4.4-eng.htm)), mathematics (Table C.4.10 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblc4.10-eng.htm)), and science (Table C.4.5 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblc4.5-eng.htm)).

Limitations

- Looking at the relative performance of different groups of students on the same or comparable assessments at different time periods shows whether the level of achievement is changing. Obviously, scores on an assessment alone cannot be used to evaluate a school system, because many factors combine to produce the average scores. Nonetheless, these assessments are one of the indicators of overall performance.
- Since data are compared for only two points in time, it is not possible to assess to what extent the observed differences are indicative of longer term trends.
- Statistical significance is determined by mathematical formulas and considers issues such as sampling. Whether a difference in results has implications for education is a matter of interpretation; for example, a statistically significant difference may be quite small and have little effect. There are also situations in which a difference that is perceived to have educational significance may not, in fact, have statistical significance.

Data sources

- Council of Ministers of Education, Canada, Employment and Social Development, Canada, and Statistics Canada. 2013. *Measuring Up: Canadian Results of the OECD PISA Study: The Performance of Canada's Youth in Mathematics, Reading and Science. 2012 First Results for Canadians Aged 15.*
- Organisation for Economic Co-operation and Development, 2014. *PISA 2012 Results: What Students Know and Can Do – Student Performance in Mathematics, Reading and Science (Volume I).*

Pan-Canadian Assessment Program (PCAP)

Tables C.4.13, C.4.14, C.4.15, C.4.16, C.4.18, C.4.19, and C.4.20

Indicator **C4** reports on student achievement in three core learning areas (also referred to as domains): mathematics, science, and reading. It also examines the process of mathematics problem-solving. This sub-indicator examines performance by presenting results from the Pan-Canadian Assessment Program (PCAP), an initiative of the provinces and territories conducted through the Council of Ministers of Education, Canada (CMEC).

Detailed information on the performance of Grade 8 students in Canada in the major PCAP domain of science, assessed in 2013, is presented. Mean scores and the distribution of students by performance levels for the overall science domain, as well as mean scores for the science sub-domains, are also outlined (Tables C.4.18 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblc4.18-eng.htm) and C.4.19 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblc4.19-eng.htm)). The performance of students in science and reading in 2013 (Table C.4.13 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblc4.13-eng.htm)) is also shown, in addition to performance over time for science (Table C.4.20 (www.statcan.gc.ca/pub/81-582-x/2015003/tbl/tblc4.20-eng.htm)). Results are presented by the language of the school system.

Concepts and definitions

- The **Pan-Canadian Assessment Program (PCAP)** is a cyclical program of assessments that measures the achievement of Grade 8 students in Canada. It is conducted by the Council of Ministers of Education, Canada (CMEC). PCAP provides a detailed look at each of three core learning areas, or domains, in the years when it is a major focus of the assessment (reading in 2007, mathematics in 2010, and science in 2013), along with a minor focus on the other two domains. PCAP, which was first conducted in 2007, has replaced CMEC's School Achievement Indicators Program (SAIP). PCAP was designed to determine whether students across Canada reach similar levels of performance in these core learning areas at about the same age, and to complement existing assessments in each jurisdiction.

    - PCAP 2013 focused on science literacy, defined through three competencies (science inquiry, problem solving, and scientific reasoning); four subdomains (nature of science, life science, physical science, and Earth science); as well as attitudes about science and its role in society. Science performance levels were developed in consultation with independent experts in education and assessment and align broadly with internationally accepted practice. Provinces also worked to ensure that the unique qualities of our country's education systems are taken into account.
- Mathematics: Mathematics is assessed as a conceptual tool that students can use to increase their capacity to calculate, describe, and solve problems.
- Reading is considered a dynamic, interactive process during which the reader constructs meaning from texts. The process of reading involves the interaction of reader, text, purpose and context, before, during, and after reading.
- While all three of the PCAP domains are tested in each assessment, each cycle places a major focus on only one domain, meaning it will include more assessment items than the other two. PCAP has been, and will be, administered to students as follows:

Three Pan-Canadian Program Assessment (PCAP) domains tested

Domain focus	2010	2013	2016	2019	2022
Major	Mathematics	Science	Reading	Mathematics	Science
Minor	Science	Reading	Mathematics	Science	Reading
Minor	Reading	Mathematics	Science	Reading	Mathematics

Methodology

- Approximately 32,000 Grade 8 students from Canada's 10 provinces and Yukon participated in PCAP 2010. The Northwest Territories and Nunavut have not yet participated in the PCAP assessments.
- When PCAP began in 2007, its target population was all 13-year-old students. In 2010, the target was modified to capture all Grade 8 students, regardless of age. This simplified the selection of students and reduced disruptions to the schools and in the classrooms. In 2007, 13-year-old students accounted for most of the PCAP sample, although these students may not have all been in Grade 8 at the time.
- The assessment adopted the following stratified sampling process in the selection of participants:
    - the random selection of schools from each jurisdiction, drawn from a complete list of publicly funded schools provided by the jurisdiction;
    - the random selection of Grade 8 classes, drawn from a list of all eligible Grade 8 classes within the school;
    - the selection of all students enrolled in the selected Grade 8 class;
    - when intact Grade 8 classes could not be selected, a random selection of Grade 8 students.
- The PCAP participation rate was over 85% of sampled students. The school determined whether or not a student could be exempted from participating in the PCAP assessment. Students were excused from the assessments if they had, for example: functional disabilities; intellectual disabilities; socio-emotional conditions; or limited language proficiency in the target language of the assessment.
- The PCAP structure was designed to align with that used for the Programme for International Student Assessment (PISA), which is conducted by the Organisation for Economic Co-operation and Development (OECD).
- PCAP 2013 tested approximately 32,000 students in English, and about 8,000 students in French. The results for students in the French school system were reported as French language, and the results for students in the English school system were reported as English language. The overall results for a jurisdiction represent those for students in both systems. Results for French immersion students who wrote in French were calculated as part of the English results since these students are considered part of the English-language cohort. (Caution is advised when comparing achievement results based on assessment instruments that were prepared in two different languages. Despite extensive efforts to produce an equivalent test in both languages, each language has unique features that may make direct comparisons difficult.)
- Results for the major domains are available in an overall domain scale (which represents students' overall performance across all the questions in the assessment for that domain), as well as on the sub-domains that make up each overall scale. As fewer items are tested as part of the minor domains, only combined or overall results are available from PCAP.

- When scores obtained from different populations and on different versions of a test are compared over time, a common way of reporting achievement scores that will allow for direct comparisons is needed. One such commonly used method numerically converts the raw scores to "standard scale scores." For PCAP 2013, raw scores were converted to a scale on which the average for the Canadian population was set at 500, with a standard deviation of 100. From this conversion, the scores of two-thirds of all participating students fell within the range of 400 to 600 points, which represents a "statistically normal distribution" of scores.
- Results for a major domain in PCAP can also be presented as the percentage of students who had different performance levels. Performance levels represent how well students were doing based on the cognitive demand and degree of difficulty of the test items. Cognitive demand is defined by the level of reasoning required by the student to correctly answer an item, from high demand to low demand; degree of difficulty is defined by a statistical determination of the collective performance of the students on the assessment. There were four levels of performance in the science component of PCAP 2013:
    - Level 4 (scores of 655 and above)
    - Level 3 (scores between 516 and 654)
    - Level 2 (scores between 379 and 515)
    - Level 1 (scores 378 and less)
- Level 2 represents the expected level of performance for Grade 8 students, and Level 1, a level below that expected of students in their Grade 8 level group. Levels 3 and 4 represent higher levels of performance. These definitions of the expected levels of performance were established by a panel of assessment and education experts from across Canada, and were confirmed as reasonable given the actual student responses from the PCAP assessments.
- When comparing student performance among provinces and territories, or across population sub-groups, statistically significant differences must be considered. Standard errors and confidence intervals were used as the basis for performing comparative statistical tests. The standard error expresses the degree of uncertainty around the survey results associated with sampling and measurement errors. The standard error is used to construct a confidence interval. The confidence interval represents the range within which the score for the population is likely to fall, with 95% probability. It is calculated as a range of plus or minus about two standard errors around the estimated average score. The differences between estimated average scores are statistically significant if the confidence intervals do not overlap.
- This indicator compares the performance of students in mathematics on the 2013 PCAP assessment with the first major assessment of this domain in PCAP 2010. It is not possible to compare the results from any minor assessments that took place before the first major (full) assessment of a domain because the framework for the domain is not fully developed until the cycle in which it is assessed as a major domain. Consequently, the results measured as a minor domain beforehand are not comparable.
- In addition to the assessment of students' knowledge and skills in mathematics, reading, and science, PCAP also administers accompanying contextual questionnaires to students, teachers, and schools.

Limitations

- An examination of the relative performance of different groups of students on the same or comparable assessments at different time periods shows whether the level of achievement is changing. However, scores on an assessment alone cannot be used to evaluate a school system, because many factors combine to produce the average scores. Nonetheless, these assessments are one of the indicators of overall performance.
- Since data are compared for only two points in time, it is not possible to assess to what extent the observed differences are indicative of longer term trends.
- Statistical significance is determined by mathematical formulas and considers issues such as sampling. Whether a difference in results has implications for education is a matter of interpretation; for example, a statistically significant difference may be quite small and have little effect. There are also situations in which a difference that is perceived to have educational significance may not, in fact, have statistical significance.

Data source

- *Pan-Canadian Assessment Program, PCAP-2013: Report on the Pan-Canadian Assessment of Science, Reading, and Mathematics*, Council of Ministers of Education, Canada (CMEC), 2014.

C5 Information and communications technologies (ICT)

Tables C.5.1, C.5.6, C.5.7 and C.5.8

Indicator **C5** reports on computer and software availability in schools (Tables C.5.1 (www.statcan.gc.ca/pub/81-582-x/2012001/tbl/tblc5.1-eng.htm) and C.5.6 (www.statcan.gc.ca/pub/81-582-x/2012001/tbl/tblc5.6-eng.htm)), computer use among students at school (Table C.5.7 (www.statcan.gc.ca/pub/81-582-x/2012001/tbl/tblc5.7-eng.htm)), and student self-confidence in performing computer tasks (Table C.5.8 (www.statcan.gc.ca/pub/81-582-x/2012001/tbl/tblc5.8-eng.htm)). Information is presented for Canada, the provinces, and selected member countries of the Organisation for Economic Co-operation and Development (OECD) using results from the OECD's 2009 Programme for International Student Assessment (PISA).

Concepts and definitions

- Information for this indicator is obtained through the 2009 Programme for International Student Assessment (PISA), which evaluates the skills and knowledge of 15-year-old students that are considered to be essential for full participation in modern economies, and sheds light on a range of factors that contribute to successful students, schools, and education systems. Information on computer and software availability in schools is obtained through the PISA school context questionnaire in which principals provided information on the availability of computers at their schools and whether they felt a lack of computers or software hindered instruction. Information on computer use among students at school and student self-assessment of their confidence in performing computer tasks was obtained from the optional ICT familiarity component of the PISA student context questionnaire.
- The **number of computers per student** is often used as a proxy to indicate the technology available to students. It refers to the total number of computers available for educational purposes to students in schools in the national modal grade for 15-year-olds (Grade 10 or equivalent in Canada) divided by the total number of students in the modal grade.
- A **shortage or inadequacy of computers or software for instruction** was explored in the PISA 2009 school context questionnaire as another way of looking at student access to ICT resources. In this questionnaire, principals reported on their perceptions of whether their school's capacity to provide instruction was hindered by a shortage of computers or computer software for instruction. Schools are considered to have a shortage or inadequacy of computers or software for instruction when school principals reported that this situation was hindering instruction to "some extent" or "a lot". The principals' subjective perceptions of shortages should be interpreted with some caution, because cultural factors and expectations, along with pedagogical practices, may influence the degree to which principals consider shortages a problem. Perceptions of inadequacy may be related to higher expectations among principals for ICT-based instruction rather than fewer computers available for learning.
- **The Index of self-confidence in information and communications technologies high-level tasks** was constructed to summarize student's self-confidence in performing certain computer tasks. This index reflects a composite score based on students' indications of the extent to which they could perform the following five different types of technical tasks: edit digital photographs or other graphic images; create a database; use a spreadsheet to plot a graph; create a presentation; create a multimedia presentation. For each task there were four possible responses: I can do this very well by myself; I can do this with help from someone; I know what this means but I cannot do it; I don't know what this means. This index was constructed so that the average OECD student would have an index value of zero, and about two-thirds of the OECD student population would be between -1 and 1. For this index, a negative score indicates a level of confidence that is lower than the average calculated for students across OECD countries. Students' subjective judgments of task competency may vary across jurisdictions. Each index is self-contained; that is, a jurisdiction's score on one index cannot be directly compared with its score on another.
- The **Index of computer use at school** was constructed to summarize how frequently students perform different types of ICT activities at school. This index reflects a composite score based on students' responses when asked how frequently they perform the following nine activities: chat on-line; use e-mail; browse the Internet for schoolwork; download, upload or browse material from the school Web site; post work on the school's Web site; play simulations; practice and do drills (e.g., for mathematics or learning a foreign language); do individual homework; and do group work and communicate with other students. For each activity there were four possible responses: never or hardly ever; once or twice a month; once or twice a week; every day or almost every day. This index was constructed so that the average OECD student would have an index value of zero, and about two-thirds of the OECD student population would be between -1 and 1. Index points above zero indicate a frequency of use above the OECD average. Each index is self-contained; that is, a jurisdiction's score on one index cannot be directly compared with its score on another.

- **The modal grade attended by 15-year-olds** is the grade attended by most 15-year-olds in the participating country or economy. In Canada, most 15-year-olds attend Grade 10 (or equivalent).
- **Students' socio-economic status** is measured by the PISA Index of Economic, Social and Cultural Status (ESCS). It is important to emphasize that this indicator presents information organized according to the socio-economic status of the student, not of the school attended by the student.
- The **PISA Index of Economic, Social and Cultural Status (ESCS)** provides a measure of the socio-economic status of the student. This index was constructed based on information provided by the representative sample of 15-year-old students who participated in the PISA student background questionnaire, in which information on students' backgrounds was obtained from their answers to a 30-minute questionnaire that covered topics such as educational background, family and home situation, reading activities, and school characteristics. The PISA ESCS index was derived from the following variables: the international socio-economic index of occupational status of the father or mother, whichever is higher; the level of education of the father or mother, whichever is higher, converted into years of schooling; and the index of home possessions, obtained by asking students whether they had a desk at which they studied at home, a room of their own, a quiet place to study, a computer to use for school work, educational software, a link to the Internet, their own calculator, classic literature, books of poetry, works of art (e.g., paintings), books to help them with their school work, a dictionary, a dishwasher, a DVD player, three other country-specific items, and the number of cellular phones, televisions, computers, cars and bathrooms at home. The rationale for choosing these variables is that socio-economic background is usually seen as being determined by occupational status, education, and wealth. As no direct measure of parental income or wealth was available from PISA, information on access to household items was used as a proxy as students would have knowledge of these items within the home. These questions were selected to construct the indices based on theoretical considerations and previous research. Structural equation modeling was used to validate the indices.
- Greater values on the Index of Economic, Social and Cultural Status (ESCS) represent a more advantaged social background, while smaller values represent a less advantaged social background. A negative value indicates that the socio-economic status is below the OECD mean. The index is divided into quarters based on students' values on the ESCS index. Therefore students in the bottom quarter are in the lowest quarter of students in the ESCS index, and students in the top quarter are in the highest quarter of students based on their ESCS value.

Methodology

- The target population for PISA 2009 comprised 15-year-olds who were attending schools in one of Canada's 10 provinces; the territories have not participated in PISA to date. Students of schools located on Indian reserves were excluded, as were students of schools for those with severe learning disabilities, schools for blind and deaf students, and students who were being home-schooled.
- In 2009, PISA was administered in 65 countries and economies, including Canada and all other OECD member countries. Between 5,000 and 10,000 students aged 15 from at least 150 schools were typically tested in each country. In Canada, approximately 23,000 students from about 1,000 schools participated in the 10 provinces. This large Canadian sample was needed to produce reliable estimates for each province.
- The information for this indicator is obtained from certain responses to three contextual questionnaires that were administered along with the main PISA skills assessment: a student background questionnaire that provided information about students and their homes; a questionnaire on familiarity with ICT that was administered to students; and a questionnaire administered to school principals. The questionnaire framework that is the basis of the context questionnaires and the questionnaires themselves are found in *PISA 2009 Assessment Framework: Key Competencies in Reading, Mathematics and Science* (OECD 2010), available at www.oecd.org.
- All member countries of the OECD participated in the PISA 2009 main assessment (including the student and school background questionnaires that are a main source of data for this indicator), and 29 member countries chose to administer the optional ICT familiarity questionnaire. This indicator presents information for a subset of these participating countries; namely, the G-8 countries (Canada, France, Germany, Italy, Japan, the Russian Federation, the United Kingdom, and the United States) and nine selected OECD countries that were deemed to be among Canada's social and economic peers and therefore of key comparative interest (Australia, Denmark, Finland, Ireland, Korea, New Zealand, Norway, Sweden, and Switzerland).
- The statistics in this indicator represent estimates based on samples of students, rather than values obtained from the entire population of students in each country. This distinction is important as it cannot be said with certainty that a sample estimate has the same value as the population parameters that would have been obtained had all 15-year-old

students been assessed. Consequently, it is important to measure the degree of uncertainty of the estimates. In PISA, each estimate has an associated degree of uncertainty, which is expressed through the standard error. In turn the standard error can be used to construct a confidence interval around the estimate—calculated as the estimate +/- 1.96 x standard error—which provides a way to make inferences about the population parameters in a manner that reflects the uncertainty associated with the sample estimates. Using this confidence interval, it can be inferred that the population parameter would lie within the confidence interval in 95 out of 100 replications of the measurement, using different samples randomly drawn from the same population.

- When comparing sample estimates among countries, provinces and territories, or population subgroups, statistically significant differences must be considered in order to determine if the true population parameters are likely different from each other. Standard errors and confidence intervals are used as the basis for performing comparative statistical tests. Results are statistically different if the confidence intervals do not overlap.
- In Table C.5.6, differences in the percentage of students whose principals reported a shortage or inadequacy of computers or software between the top and bottom quarters of the PISA Index of Economic, Social, and Cultural Status were tested for statistical significance at Statistics Canada's Centre for Education Statistics. The testing method involved calculating the confidence intervals surrounding the percentage of students whose principals reported computer or software inadequacies for both the top and bottom quarters of the index. If these confidence intervals did not overlap, then the difference was determined to be statistically significant at the 95% confidence level.

Limitations

- Some data previously presented in Indicator C5 of Pan-Canadian Education Indicators Program (PCEIP) are not available from PISA 2009 as some of the questions were not repeated, or the information is not comparable with that used in past iterations of the PISA assessment.
- The PISA background questionnaires that explored ICT topics were not designed to assess the quality of ICT use at school nor the integration of ICT in pedagogy and its impact on student's cognitive skills.
- The territories have not participated in PISA to date.

Data sources

- Statistics Canada, Programme for International Student Assessment (PISA), 2009 database; Organisation for Economic Co-operation and Development (OECD), 2009 PISA database.

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Section D: Postsecondary education

D1 Postsecondary enrolment

Registered apprentices

Tables D.1.1 through D.1.3

Overall, Indicator **D1** portrays postsecondary enrolment. This sub-indicator presents information on the number of registered apprentices in Canada, and in its provinces and territories (Table D.1.1 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbld1.1-eng.htm)), including breakdowns by sex and major trade group (Table D.1.2 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbld1.2-eng.htm)), and by age group (Table D.1.3 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbld1.3-eng.htm)).

Concepts and definitions

- Information on the number of **registered apprentices** is based on data provided by apprenticeship branches in the provinces and territories and includes all individuals registered in an apprenticeship program, whether or not they had been enrolled in any formal classroom training during the year. This information is collected through the Registered Apprenticeship Information System (RAIS), which gathers information on individuals who receive training and those who obtain certification in a trade for which apprenticeship training is being offered; specifically, the number of registered apprentices taking in-class and on-the-job training in trades that have either Red Seal or non-Red Seal endorsement, and for which apprenticeship training is either compulsory or voluntary. The RAIS survey also compiles data on the number of provincial and interprovincial Red Seal certificates granted to apprentices or trade qualifiers (challengers). [1]
- Provincial and territorial governments co-ordinate apprenticeship programs in their jurisdiction. Most of the apprentice's training time is spent on the job working with experienced, certified tradespersons who act as mentors, usually over an average period of three to four years. A portion of the apprenticeship program is spent in formal classroom instruction prior to or during their apprenticeship period.
- The numbers of registered apprentices are presented for the following 25 **major trade groups**, by sex: automotive service; carpenters; early childhood educators and assistants; community and social service workers, electricians; electronics and instrumentation; exterior finishing; food service; hairstylists and estheticians; heavy duty equipment mechanics; heavy equipment and crane operators; interior finishing; landscape and horticulture technicians and specialists; machinists; metal workers (other); millwrights; oil and gas well drillers, servicers, testers and related workers; plumbers, pipefitters and steamfitters; refrigeration and air conditioning mechanics; sheet metal workers; user support technicians; welders; stationary engineers and power plant operators; construction workers (other); and other. [2] These 25 major trade groups comprise a special grouping that was created using the National Occupation Classification (NOC).
- The numbers and percentages of registered apprentices are provided for the following seven **age groups**: under 20; 20 to 24; 25 to 29; 30 to 34; 35 to 39; 40 to 44; 45 and over; and for those whose age was unknown.

Methodology

- The **Registered Apprenticeship Information System (RAIS)** survey is an annual census. Data are collected for all registered apprentices and trade qualifiers (challengers); no sampling is done. Response is mandatory and data are collected from administrative files supplied by provincial apprenticeship branches. The information is requested in individual record format and each record represents a registered apprentice or trade qualifier (challenger); however,

multiple registrations in more than one trade by an individual do exist in the data. Information is collected on registration status of apprentices at the beginning and during the reporting period; their status during and at the end of the reporting period; the number of credits accumulated at the start and during their apprenticeship as well as the type of certificate granted. The reference period is the calendar year, and the collection period is February through September of the reference year.

- The RAIS collected aggregate data by trade programs from 1980 to 1990. It included information on the number of new registrations, total registrations, leavers, completions and certificates granted. In 1991, in response to requests for more information on individual apprentices, the survey began collecting additional information on sex and age and requested information in individual record format. It should be noted that aggregate reporting still existed for some jurisdictions until 2007. Since 2008, the provinces have been providing data at the individual level.
- In 2008, the RAIS underwent a major survey redesign, and a number of new data elements were added and requested from the jurisdictions. Some of the new data elements being requested relate to the number of technical and on-the-job hours completed by apprentices during their training.
- Beginning with the 2008 data, the RAIS used the National Occupation Classification (NOC) to create a special grouping of 25 major trade groups. All RAIS historical data have been revised to reflect these 25 groups.

Limitations

- To ensure the confidentiality of responses, all counts are randomly rounded to a multiple of 3. As a result, when the data are summed or grouped, the total value may not match the sum of the individual values, since the total and subtotals are independently rounded. Similarly, percentage distributions, which are calculated on rounded data, may not necessarily add up to 100%.
- The information on number and percentage distribution of registered apprentices that is presented by age group also includes an "age unknown" category, as age was not available for some records due to missing information.
- Provinces and territories, which provide the data for this release, make operational and administrative changes related to the training and certification of the trades within their jurisdictions. Changes have occurred in all provinces and territories since 1991 that affect historical comparisons. For the 2013 reporting period in particular, these changes had an impact on all data collected by the survey, including the number of registrations, participation in Red Seal and non-Red Seal apprenticeship programs, and certificates awarded. Interpretation of the data should be made within the context of these administrative and operational changes. For further information on federal, provincial and territorial changes see the Registered Apprenticeship Information System (RAIS) Guide.

Data Sources

- Registered Apprenticeship Information System (RAIS), Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3154.

Colleges

Tables D.1.4 and D.1.7

Overall, Indicator **D1** portrays postsecondary enrolment. This sub-indicator presents information on student enrolment in colleges, by sex, registration status and program type (Table D.1.4.1 (www.statcan.gc.ca/pub/81-582-x/2011002/tbl/tbld1.4.1-eng.htm) and Table D.1.4.2 (www.statcan.gc.ca/pub/81-582-x/2011002/tbl/tbld1.4.2-eng.htm)). These counts are presented for full- and part-time students. The percentage of female enrolment relative to total full-time college enrolment, by program type, is also examined (Table D.1.7.1 (www.statcan.gc.ca/pub/81-582-x/2011002/tbl/tbld1.7.1-eng.htm) and Table D.1.7.2 (www.statcan.gc.ca/pub/81-582-x/2011002/tbl/tbld1.7.2-eng.htm)). Data are presented for Canada, and for the provinces and territories.

Concepts and definitions

- The information presented reflects **college enrolment**.[3] Counts represent the number of students who were enrolled in an educational activity on October 31st and thus present a snapshot of enrolments on that day.
- **Colleges** are created under the authority of either a province's *Colleges Act* or equivalent, or under a *Society/Societies Act* or equivalent, with education as a primary purpose. These institutions are created primarily to offer certificate, diploma, and transfer or continuing education and professional development programs requiring less than three years of full-time study. They are often circumscribed by government and often need to seek government

approval to introduce new programs, especially degree programs. High school completion is generally required for admission.

- **College** refers to community colleges, CEGEPs (collège d'enseignement général et professionnel or college of general and vocational education in Quebec), technical institutes, hospital and regional schools of nursing, radiography, medical technology and health records, as well as establishments providing technological training in specialized fields.
- **Registration status** captures enrolment for full- and part-time students on the day of the snapshot. Since there is no commonly accepted definition for the registration status of full- and part-time students, it is defined by the reporting postsecondary institutions.
- Information is presented for the following **program types** offered at colleges:
    - **Total enrolment, all programs**, for both part-time and full-time students, also includes the category "Other program levels," which is not presented in the tables. "Other program levels" includes "program levels not applicable" or "non-programs" (taking non-credit courses or taking courses without seeking a credential).
    - **College certificate or diploma and other programs at the college level** includes college postsecondary programs; college post-diploma programs; collaborative degree programs; university transfer programs from a college or CEGEP (includes associate degrees); and college preliminary year courses.
    - **Undergraduate** enrolment captures those programs leading to a bachelor's degree, an applied degree, a university preliminary year or pre-bachelor, or to an undergraduate-level certificate or diploma.
    - **Graduate** portrays programs leading to a master's degree or other university graduate-level certificates or diplomas.

Methodology

- The data on college enrolments were extracted from the **Postsecondary Student Information System (PSIS)**, a national survey that enables Statistics Canada to publish information on enrolments in and graduates of postsecondary education institutions in Canada. Implemented in 2000, PSIS replaced the following three surveys: the University Student Information System (USIS), the Community College Student Information System (CCSIS) and the Trade and Vocational Student Survey (TVOC).
- PSIS is a census with a cross-sectional design and a longitudinal follow-up. Data are collected for all units of the target population; no sampling is done. Up to and including 2007, the target population was Canadian public and private not-for-profit postsecondary institutions (universities, community colleges and trade and vocational training centres). As of 2008, the target population is postsecondary institutions that are publicly funded by provincial ministries of education or their equivalent. Each postsecondary institution (the "collection unit") provides Statistics Canada with data pertaining to its programs and students.
- The college data presented here exclude students enrolled in programs related to pre-employment, apprenticeship, basic training or skills upgrading, second language training, job readiness or orientation programs.

Limitations

- From year to year, more institutions are reporting data using the Postsecondary Student Information System (PSIS) format. The institutions that report data using the PSIS format are asked to include students enrolled in non-programs, including non-credit activities, as well as undergraduate- and graduate-level enrolments. In general, this has resulted in institutions reporting a larger number of student enrolments. Starting in 2000/2001, enrolments from private non-subsidized institutions that were part of the PSIS survey were no longer included.
- These figures on college enrolment should not be compared with those published before PSIS was introduced in 2000. All PSIS data are subject to revision.
- To ensure the confidentiality of responses, all counts are randomly rounded to a multiple of 3. Since the total and subtotals are independently rounded, the total values may not match the sum of the individual values. Similarly, percentage distributions, which are calculated on rounded data, may not necessarily add up to 100%.
- The college enrolment figures for both sexes include enrolments for which sex was not reported; therefore, these figures may not match the totals obtained when the enrolments for males and females are added together.
- The denominator used to calculate the **percentage of females relative to total full-time college enrolment** excludes enrolments for which sex was not reported.

Data Sources

- Postsecondary Student Information System (PSIS), Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 5017.

Universities

Tables D.1.5 and D.1.6

Overall, Indicator **D1** portrays postsecondary enrolment. This sub-indicator provides information on student enrolment in universities, by sex, registration status and program type (Table D.1.5 (www.statcan.gc.ca/pub/81-582-x/2010004/tbl/tbld1.5-eng.htm)). These counts are presented for full- and part-time students. The percentage of female enrolment relative to total full-time university enrolment, by program type, is also examined (Table D.1.6 (www.statcan.gc.ca/pub/81-582-x/2010004/tbl/tbld1.6-eng.htm)). Data are presented for Canada and the provinces (there are no universities in the territories).

Concepts and definitions

- The information presented reflects **university enrolment.**[4] Counts represent the number of students who were enrolled in an educational activity on December 1st (November 1st in Ontario) and thus present a snapshot of enrolments on that day.
- **Universities** are created under the authority of a province's *University Act* or equivalent, or under a *Society/Societies Act* or equivalent, with education as a primary purpose. These institutions are created primarily for the purposes of offering degree programs and to conduct research. They generally have complete authority to set their own academic standards and priorities. Within the institution, the supreme authority on all academic policy is generally a body on which faculty predominate.
- **Registration status** captures enrolment for full- and part-time students on the day of the snapshot. Since there is no commonly accepted definition for the registration status of full- and part-time students, it is defined by the reporting postsecondary institutions.
- Information is presented for the following **program types** offered at universities:
    - **Total enrolment, all programs**, for both full-time and part-time students, includes the following categories not presented in the tables: "trade/vocational and preparatory training certificate or diploma," "community college certificate or diploma or other community college level" and "other program levels." "Other program levels" includes "program levels not applicable" or "non-programs" (taking non-credit courses or taking courses without seeking a credential.
    - **Undergraduate** enrolment captures those programs leading to a bachelor's degree, a first professional degree, an applied degree, university preliminary year or pre-bachelor, undergraduate level certificate or diploma, license undergraduate and licentiate or testamur.
    - **Graduate** reflects enrolment in programs leading to a master's degree, an earned doctorate, post-doctoral program, master's qualifying year, university graduate level certificate or diploma, PhD qualifying year or probationary, internship (postgraduate medical education known as post-MD) and residency (medical, dental, veterinary).

Methodology

- The data on university enrolments were extracted from the **Postsecondary Student Information System (PSIS)**, a national survey that enables Statistics Canada to publish information on enrolments in and graduates of postsecondary education institutions in Canada. Implemented in 2000, PSIS replaced the following three surveys: the University Student Information System (USIS), the Community College Student Information System (CCSIS) and the Trade and Vocational Student Survey (TVOC).
- PSIS is a census with a cross-sectional design and a longitudinal follow-up. Data are collected for all units of the target population; no sampling is done. Up to and including 2007, the target population was Canadian public and private not-for-profit postsecondary institutions (universities, community colleges and trade and vocational training centres). As of 2008, the target population is postsecondary institutions that are publicly funded by provincial ministries of education or their equivalent. Each postsecondary institution (the "collection unit") provides Statistics Canada with data pertaining to its programs and students.

Limitations

- From year to year, more institutions are reporting data using the Postsecondary Student Information System (PSIS) format. The institutions that report data using the PSIS format are asked to include students enrolled in non-programs. In general, this has resulted in institutions reporting a larger number of student enrolments.
- These figures on university enrolment should not be compared with those published before PSIS was introduced in 2000. Enrolments counts for 2004/2005 through 2007/2008 have been revised, and all PSIS data are subject to revision.
- To ensure the confidentiality of responses, all counts are randomly rounded to a multiple of 3. Since the total and subtotals are independently rounded, the total values may not match the sum of the individual values. Similarly, percentage distributions, which are calculated on rounded data, may not necessarily add up to 100%.
- The university enrolment figures for both sexes include enrolments for which sex was not reported; therefore, these figures may not match the totals obtained when the enrolments for males and females are added together.
- The denominator used to calculate the **percentage of females relative to total full-time university enrolment** excludes enrolments for which sex was not reported.
- Since 2005/2006, enrolments for University of Regina have not been available.
- The following institutions, previously colleges, now have the status of universities and are included in the 2008/2009 counts for British Columbia: Capilano University, Vancouver Island University, Emily Carr University of Art and Design, Kwantlen Polytechnic University and University of the Fraser Valley. The increase in enrolment for Canada in 2008/2009 was mainly due to the attribution of university status to these five colleges. Part of this increase in university enrolment was in "Trade/vocational and preparatory training certificate or diploma" and "Community college certificate or diploma or other community college level" programs.

Data Sources

- Postsecondary Student Information System (PSIS), Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 5017.

D2 Postsecondary completions

Registered apprenticeship completions

Tables D.2.1 and D.2.2

Overall, Indicator D2 examines trends in postsecondary completions. This sub-indicator presents information on the number of individuals completing registered apprenticeship programs in Canada, and in its provinces and territories (Table D.2.1 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbld2.1-eng.htm)), including breakdowns by sex and major trade group (Table D.2.2 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbld2.2-eng.htm)).

Concepts and definitions

- The information on **registered apprenticeship completions** is based on data provided by apprenticeship branches in the provinces and territories and includes registered apprentices who have completed their program. This information is collected through the Registered Apprenticeship Information System (RAIS), which gathers information on individuals who receive training and those who obtain certification in a trade for which apprenticeship training is being offered; specifically, the number of registered apprentices taking in-class and on-the-job training in trades that have either Red Seal or non-Red Seal endorsement, and for which apprenticeship training is either compulsory or voluntary. Multiple completions by an individual can exist. The RAIS survey also compiles data on the number of registered apprentices, which includes those still registered from the previous year (apprentices who have not yet completed and have not withdrawn from training), apprentices newly registered during the current year and those who had previously discontinued their apprenticeship but were reinstated in the same trade during the reporting year.
- The numbers of registered apprenticeship completions are presented for the following 25 **major trade groups**, by sex: automotive service; carpenters; early childhood educators and assistants; community and social service workers, electricians; electronics and instrumentation; exterior finishing; food service; hairstylists and estheticians; heavy duty equipment mechanics; heavy equipment and crane operators; interior finishing; landscape and horticulture technicians and specialists; machinists; metal workers (other); millwrights; oil and gas well drillers, servicers, testers and related workers; plumbers, pipefitters and steamfitters; refrigeration and air conditioning mechanics; sheet metal workers; user support technicians; welders; stationary engineers and power plant operators; construction workers (other); and other

[2]. These 25 major trade groups comprise a special grouping that was created using the National Occupation Classification (NOC).

Methodology

- The **Registered Apprenticeship Information System (RAIS)** survey is an annual census. Data are collected for all registered apprentices and trade qualifiers (challengers); no sampling is done. Response is mandatory and data are collected directly from administrative files supplied by provincial apprenticeship branches. The information is requested in individual record format and each record represents a registered apprentice or trade qualifier (challenger); however, multiple registrations in more than one trade by an individual do exist in the data. The reference period is the calendar year, and the collection period is February through September of the reference year.
- The RAIS collected aggregate data by trade programs from 1980 to 1990. It included information on the number of new registrations, total registrations, leavers, completions and certificates granted. In 1991, in response to requests for more information on individual apprentices, the survey began collecting additional information on sex and age and requested information in individual record format. It should be noted that aggregate reporting still existed for some jurisdictions up until 2007. As of 2008, all provinces report on an individual level.
- In 2008, the RAIS underwent a major survey redesign, and a number of new data elements were added and requested from the jurisdictions. Some of the new data elements being requested relate to the number of technical and on-the-job hours completed by apprentices during their training.
- Beginning with the 2008 data, the RAIS used the National Occupation Classification (NOC) to create a special grouping of 25 major trade groups. All RAIS historical data have been revised to reflect these 25 groups.

Limitations

- To ensure the confidentiality of responses, all counts are randomly rounded to a multiple of 3. As a result, when the data are summed or grouped, the total value may not match the sum of the individual values, since the total and subtotals are independently rounded. Similarly, percentage distributions, which are calculated on rounded data, may not necessarily add up to 100%.
- Provinces and territories, which provide the data for this release, make operational and administrative changes related to the training and certification of the trades within their jurisdictions. Changes have occurred in all provinces and territories since 1991 that affect historical comparisons. For the 2013 reporting period in particular, these changes had an impact on all data collected by the survey, including the number of registrations, participation in Red Seal and non-Red Seal apprenticeship programs, and certificates awarded. Interpretation of the data should be made within the context of these administrative and operational changes. For further information on federal, provincial and territorial changes see the Registered Apprenticeship Information System (RAIS) Guide.

Data Sources

- Registered Apprenticeship Information System (RAIS), Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3154.

Colleges

Tables D.2.5 and D.2.9

Overall, Indicator **D2** examines trends in postsecondary completions. This sub-indicator provides information on the number of certificates, diplomas and degrees granted by colleges, by sex of graduate and program type (Table D.2.5 (www.statcan.gc.ca/pub/81-582-x/2011002/tbl/tbld2.5-eng.htm)) and by sex of graduate and field of study (Table D.2.9 (www.statcan.gc.ca/pub/81-582-x/2011002/tbl/tbld2.9-eng.htm)). Data are presented for Canada, and for the provinces and territories, by academic year.

Concepts and definitions

- The information presented examines trends in postsecondary completions for **colleges**; that is, the **number of certificates, diplomas and degrees granted by colleges**.[5] All counts reflect the academic year as defined by the college, which generally begins on the first day after the end of the winter semester.
- **Colleges** are created under the authority of either a province's *Colleges Act* or equivalent, or under a *Society/Societies Act* or equivalent, with education as a primary purpose. These institutions are created primarily to

offer certificate, diploma, and transfer or continuing education and professional development programs requiring less than three years of full-time study. They are often circumscribed by government and often need to seek government approval to introduce new programs, especially degree programs. High school completion is generally required for admission.

- **College** refers to community colleges, CEGEPs (collège d'enseignement général et professionnel or college of general and vocational education in Quebec), technical institutes, hospital and regional schools of nursing, radiography, medical technology and health records, as well as establishments providing technological training in specialized fields. Programs related to pre-employment, apprenticeship, basic training or skills upgrading, second language training, job readiness or orientation programs are not included in these college completion counts.
- Information is presented for the following **program types** offered at colleges:
    - **College certificate or diploma and other credential at the college level** includes: college postsecondary programs; college post-diploma programs; collaborative degree programs; university transfer programs from a college or CEGEP (includes associate degree); and college preliminary year courses.
    - **Undergraduate** refers to programs leading to a bachelor's degree, an applied degree, a university preliminary year or pre-bachelor, or to an undergraduate-level certificate or diploma.
    - **Graduate** portrays programs leading to a master's degree or other university graduate-level certificates or diplomas.
- The **field of study** data are presented according to the Classification of Instructional Programs (CIP), the official classification used at Statistics Canada. The number of certificates, diplomas and degrees granted by colleges are presented for the following fields of study: agriculture, natural resources and conservation; architecture, engineering and related technologies; business, management and public administration; education; health, parks, recreation and fitness; humanities; mathematics, computer and information sciences; other; personal, protective and transportation services; personal improvement and leisure; physical and life sciences, and technologies; social and behavioural sciences and law; and visual and performing arts, and communications technologies.

Methodology

- The data on the number of certificates, diplomas and degrees granted by colleges were extracted from the **Postsecondary Student Information System (PSIS)**, a national survey that enables Statistics Canada to publish information on enrolments in and graduates of postsecondary education institutions in Canada. Implemented in 2000, PSIS replaced the following three surveys: the University Student Information System (USIS), the Community College Student Information System (CCSIS) and the Trade and Vocational Student Survey (TVOC).
- PSIS is a census with a cross-sectional design and a longitudinal follow-up. Data are collected for all units of the target population; no sampling is done. Up to and including 2007, the target population was Canadian public and private not-for-profit postsecondary institutions (universities, community colleges and trade and vocational training centres). As of 2008, the target population is postsecondary institutions that are publicly funded by provincial ministries of education or their equivalent. Each postsecondary institution (the "collection unit") provides Statistics Canada with data pertaining to its programs and students.
- The college data presented here exclude completions from programs related to pre-employment, apprenticeship, basic training or skills upgrading, second language training, job readiness or orientation.

Limitations

- From year to year, more institutions are reporting data using the Postsecondary Student Information System (PSIS) format. The institutions that report data using the PSIS format are asked to include undergraduate and graduate completions from colleges. In general, this has resulted in institutions reporting a larger number of completions. Starting in 1999/2000, completions from private non-subsidized institutions that were part of the survey were no longer included.
- These figures on college completions should not be compared with those published before PSIS was introduced in 2000. All PSIS data are subject to revision.
- To ensure the confidentiality of responses, all counts are randomly rounded to a multiple of 3. Since the total and subtotals are independently rounded, the total values may not match the sum of the individual values. Similarly, percentage distributions, which are calculated on rounded data, may not necessarily add up to 100%.
- The college completion figures for both sexes include individuals for whom sex was not reported; therefore, these figures may not match the totals obtained when the completions for males and females are added together.

Data Sources

- Postsecondary Student Information System (PSIS), Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 5017.

Universities

Table D.2.7

Overall, Indicator **D2** examines trends in postsecondary completions. This sub-indicator provides information on the number of university graduates, by sex and classification of instructional programs (CIP) (Table D.2.7 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbld2.7-eng.htm)). Data are presented for Canada and the provinces (there are no universities in the territories), and by calendar year.

Concepts and definitions

- The information presented examines trends in postsecondary completions for **universities**.[6] All counts reflect the number of graduates in the calendar year.
- **Universities** are created under the authority of a province's *University Act* or equivalent, or under a *Society/Societies Act* or equivalent, with education as a primary purpose. These institutions are created primarily for the purposes of offering degree programs and to conduct research. They generally have complete authority to set their own academic standards and priorities. Within the institution, the supreme authority on all academic policy is generally a body on which faculty predominate.
- Information is presented for the following **credential types** offered at universities: certificates, diplomas, degrees (including applied degrees), attestations and other short program credentials, associate degrees and other types of credential associated with a program.
- The **field of study** data are presented according to the Classification of Instructional Programs (CIP), the official classification used at Statistics Canada. The number of certificates, diplomas and degrees granted by colleges are presented for the following fields of study: agriculture, natural resources and conservation; architecture, engineering and related technologies; business, management and public administration; education; health and related fields; humanities; mathematics, computer and information sciences; other; personal, protective and transportation services; personal improvement and leisure; physical and life sciences, and technologies; social and behavioural sciences and law; and visual and performing arts, and communications technologies.

Methodology

- These data were extracted from the **Postsecondary Student Information System (PSIS)**, a national survey that enables Statistics Canada to publish information on enrolments in and graduates of postsecondary education institutions in Canada. Implemented in 2000, PSIS replaced the following three surveys: the University Student Information System (USIS), the Community College Student Information System (CCSIS) and the Trade and Vocational Student Survey (TVOC).
- PSIS is a census with a cross-sectional design and a longitudinal follow-up. Data are collected for all units of the target population; no sampling is done. The target population is postsecondary public institutions that are financed by a provincial ministry of education and postsecondary private institutions for non-profit that are subsidized by a provincial ministry of education.

Limitations

- All PSIS data are subject to revision.
- To ensure the confidentiality of responses, all counts are randomly **rounded to a multiple of 3.** Since the total and subtotals are independently rounded, the total values may not match the sum of the individual values. Similarly, percentage distributions, which are calculated on rounded data, may not necessarily add up to 100%.
- The university completion figures for both sexes include individuals for whom sex was not reported; therefore, these figures may not match the totals obtained when the completions for males and females are added together.

Data Sources

- Postsecondary Student Information System (PSIS), Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 5017.

D3 University educators

Tables D.3.1 through D.3.4

Indicator **D3** presents information on university educators in Canada and the provinces. It outlines the number of full-time university educators, providing breakdowns by academic rank and by sex (Table D.3.1 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tbld3.1-eng.htm)). The male–female distribution of educators, by age, is also examined (Table D.3.2 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tbld3.2-eng.htm)), as well as the age distribution of educators compared with that of the overall labour force (Table D.3.3 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tbld3.3-eng.htm)). Average salaries, by academic rank and by sex, are also presented (Table D.3.4 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tbld3.4-eng.htm)).

Concepts and definitions

- **Full-time university educators** refers to all full-time **teaching staff** employed in universities in Canada.
- **Full-time** includes:
    - staff appointed on a full-time basis whose term of appointment is not less than 12 months (including any staff member on leave);
    - new appointees hired on a full-time basis (i.e., whose term of contract is greater than 12 months) and who are at the institution for less than 12 months in the first year; and
    - staff who were appointed to teach 12 months or more and at a later date entered into a formal agreement with the institution to work on a reduced load basis. This situation usually arises with staff members who are approaching retirement.
- **Teaching staff** refers to:
    - all teachers within faculties, whether or not they hold an academic rank;
    - academic staff in teaching hospitals;
    - visiting academic staff in faculties; and
    - research staff who have an academic rank and a salary scale similar to teaching staff.

In Table D.3.4 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tbld3.4-eng.htm) , the definition of full-time university staff is similar to that used in Tables D.3.1 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tbld3.1-eng.htm) , D.3.2 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tbld3.2-eng.htm) and D.3.3 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tbld3.3-eng.htm) , but excludes staff who are on unpaid leave, all religious and military personnel or similar staff paid according to salary scales lower than those applying to regular/lay staff, and staff having a salary of zero or unreported.

- The following **academic ranks** are used:
    - **full professors**, referring to the most senior rank;
    - **associate professors**, the mid-level rank (requirements vary considerably between institutions and departments);
    - **assistant professors**, the entry-level rank;
    - **other**, which refers to lecturers, instructors and other teaching staff.
- **Gender gap** is defined as the average salary of female university educators as a percentage of the average of males.

Methodology

- The information on full-time university educators is from the **University and College Academic Staff System (UCASS)**, which conducts an annual survey that collects national comparable information on the number and socio-economic characteristics of full-time teaching staff at Canadian degree granting institutions (universities and colleges). The information is collected for each individual staff member employed by the institution as of October 1st of the academic year, presenting a snapshot as of that date.
- The percentage distribution of university educators by age and median age is based on educators for whom age is known.
- Salaries and salary scales of full-time teaching staff at Canadian universities are based on the annual rate of salary plus stipends. The data are in current dollars. The Consumer Price Index should be used to convert the data to constant dollar amounts for comparison over time. For the index and further details on converting, please see Table F.1.3 (www.statcan.gc.ca/pub/81-582-x/2012002/tbl/tblf1.3-eng.htm) in the "Reference statistics" section.

- The Labour Force Survey data used to compare the age distribution of the overall full-time employed labour force with that of full-time university teaching staff are based on a monthly average from September to April.

Limitations

- To ensure the confidentiality of responses, a random rounding process is applied to the data. As a result, when these data are summed or grouped, the total values may not match the sum of the individual values, since the total and subtotals are independently rounded. Similarly, percentage distributions, which are calculated on rounded data, may not necessarily add up to 100%.

Data Sources

- University and College Academic Staff Survey, Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada website, survey 3101.
- Labour Force Survey, Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada website, survey 3701.

D4 Research and development

Tables D.4.1 through D.4.5

Indicator **D4** presents information on research and development (R&D), focusing on the R&D performed by the higher education sector. The context for R&D activities carried out in the higher education sector is provided by examining total domestic expenditures on R&D as a percentage of GDP from an international and national perspective (Table D.4.1 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld4.1-eng.htm) and Table D.4.2 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld4.2-eng.htm)). Expenditures on R&D by performing sector are outlined (Table D.4.3 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld4.3-eng.htm) and Table D.4.4 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld4.4-eng.htm)), as are sources of funding for R&D expenditures in the higher education sector (Table D.4.5 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld4.5-eng.htm)).

Concepts and definitions

- The R&D data presented in this indicator are assembled based on guidelines presented in the Organisation for Economic Co-operation and Development's (OECD's) *Frascati Manual*.[7] These guidelines indicate that **research and development (R&D)** is considered to be any creative work undertaken on a systematic basis in order to increase the stock of scientific and technical knowledge and to use this knowledge in new applications. The central characteristic of R&D is an appreciable element of novelty and of uncertainty. New knowledge, products or processes are sought. The work is normally performed by, or under the supervision of, persons with postgraduate degrees in the natural sciences or engineering. An R&D project generally has three characteristics: a substantial element of uncertainty, novelty and innovation; a well-defined project design; and a report on the procedures and results of the projects.
- **Total domestic expenditures on R&D** (Tables D.4.1 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld4.1-eng.htm) , D.4.2 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld4.2-eng.htm) and D.4.3 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld4.3-eng.htm)) represent the total value of domestic expenditures on R&D of all organizations in the performing sectors (categorized as government, business enterprise, higher education, and private non-profit organizations). It includes R&D performed within a country and funded from abroad, but excludes payments for R&D performed abroad.
- The definition of total domestic expenditures on R&D in a provincial/territorial context is similar to that provided above. The expenditures are assigned to the province or territory in which the performing establishment is located. Personnel may live in an adjoining province or territory (e.g., the National Capital Region) and materials and equipment may come from another province or territory or country; these factors must be taken into consideration when using this statistic as a provincial/territorial indicator of R&D activity.
- **R&D performing sectors** are categorized as follows:
    - **Federal government,** which includes departments and agencies of this government.
    - **Provincial governments,** which include departments and agencies of provincial and municipal governments in Canada, as well as provincial research organizations.
    - **Business enterprise** is composed of business and public enterprises, including public utilities and government-owned firms (e.g., Canadian National Railways and Ontario Hydro).

- **Higher education**, in reference to the pan-Canadian R&D statistics, covers universities and affiliated institutions such as research hospitals, research institutes, experimental stations, and clinics under the direct control of or administered by higher education establishments. Although OECD guidelines request that R&D in the entire postsecondary sector be reported, data for Canada are limited to R&D activities in universities and affiliated institutions as data on R&D in colleges and similar institutions are not currently collected at Statistics Canada.
- **Private non-profit** comprises charitable foundations, voluntary health organizations, scientific and professional societies, and other organizations not established to earn profits.

- **Sources of funds for R&D in the higher education sector** are categorized as follows:
  - **Federal government**, through the Natural Sciences and Engineering Research Council (NSERC), the Social Sciences and Humanities Research Council (SSHRC), the Canadian Institutes of Health Research (CIHR), the Canada Foundation for Innovation, Canada Research Chairs, and other federal departments and agencies.
  - **Provincial governments**, including municipal governments.
  - **Business enterprises**, including donations, bequests and contracts from individuals and businesses;
  - **Private non-profit organizations**, including donations, bequests, and contracts from foundations and not-for-profit organizations.
  - **Foreign sources**, which are funding entities located abroad.
  - **Higher education sector,** which funds its own R&D using two revenue streams:
    - *General funds*: These represent government transfers (or block grants) to higher education institutions that are used to support R&D activity. Although these funds essentially represent indirect government spending on R&D, for the purposes of pan-Canadian statistics, they are allocated to higher education funding due to the difficulty of categorizing these funds as provincial or federal.
    - *Own revenue sources*: This refers to self-generated revenue of higher education institutions from sources such as tuition fees, investment income, revenue from sales of services and products by the institution, and license and patent incomes.

Methodology

- Total domestic expenditures on R&D in Canada are estimated annually by Statistics Canada, by type of sector, source of funds, and science type using a series of surveys supplemented by modelling. R&D expenditures include provincial research councils and foundations. Data for the provincial government performing sector are currently modelled based on responses from the 2010 Provincial Scientific Activities Survey. This release includes 2012 data on R&D activities performed by the provincial governments of Alberta and Quebec as they conducted their own survey and provided this information to Statistics Canada.
- The expenditures for R&D performed by the higher education sector (Table D.4.4 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld4.4-eng.htm)) are derived from an estimation model, which uses the following components:
  1. direct sponsored research;
  2. direct non-sponsored research (the time spent on R&D when it is undertaken as part of the teaching function, taking into account the portion of faculty time spent on this type of R&D and faculty salaries)
  3. indirect costs of sponsored and non-sponsored research;
  4. direct and indirect cost of R&D performed by affiliated hospitals not included elsewhere in the main data source.
- The main source of data for the above estimation model is the annual *Financial Information of Universities and Colleges* survey, conducted in conjunction with the Canadian Association of University Business Officers (CAUBO).[8]
- Sources of funds for expenditures on research and development in the higher education sector are derived from an estimation model. The data used in the model are obtained from the *Financial Information of Universities and Colleges* survey. These data on sources of funds for R&D conducted require two main refinements before they can be used: reconciliation of sector definitions and discrepancies between expenditure and income data.
- The data on R&D in the higher education sector are based on a revised estimation procedure first used for the 1998/1999 estimates.
- During the 2001/2002 estimation procedure, the one-time grant to universities awarded by the federal government to assist in indirect costs associated with research activities taking place at universities was included in the expenditures on R&D by the university sector. The estimation system had to be modified to ensure those costs were sourced to the federal government and not double-counted. In 2003/2004, the indirect costs grant for R&D in universities became an annual payment.

- Table D.4.1 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld4.1-eng.htm) compares Canada with other OECD member countries. To facilitate the international discussion, subsequent comparisons make use of the G-7 and the top four OECD countries in terms of the level of resources devoted to R&D relative to gross domestic product, as they thereby serve as useful reference points.
- R&D expenditures and source of funds data are shown in current dollars. To convert these current dollar data to constant dollar amounts for comparison over time, it is recommended that the Gross Domestic Product (GDP) Implicit Price Index be used for national and provincial conversions. A GDP deflator is the appropriate deflator for economy-wide statistics because it accounts for the cost of goods for households, for government and for industry. For the index and further details on converting, see Table F.1.2 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tblf1.2-eng.htm) .
- The OECD totals shown in Tables D.4.1 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld4.1-eng.htm) , D.4.2 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld4.2-eng.htm) and D.4.3 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld4.3-eng.htm) reflect the OECD countries as a single entity as each total represents the sum of all values provided by each country. For example, in Table D.4.1 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld4.1-eng.htm) , the OECD total for total domestic expenditures on R&D as a percentage of GDP was obtained by dividing the total domestic expenditures in all OECD countries by the total GDP across OECD countries.

Limitations

- One of the most important issues relating to R&D concerns its definition. There remains some ambiguity in defining precisely what constitutes R&D; for example, in a continuing project, determining the precise point at which the project passes the boundary of R&D and becomes exploitation of a process or product for which it may be said that the R&D stage has been completed. This ambiguity is perhaps less serious in internal time series, where it may be expected that the year-to-year application of the definition by the same reporting unit will be consistent.
- Estimates of total domestic expenditure on R&D, like any other social or economic statistic, can only be approximately true. Different components are of different accuracy, sector estimates probably vary from 5% to 15% in accuracy. However, estimates of total domestic expenditure are sufficiently reliable for their main use as an aggregate indicator for science policy.
- The source for internationally comparative statistics on R&D is the OECD. OECD guidelines request that R&D in the entire postsecondary sector (defined as all universities, colleges of technology, and other institutes of postsecondary education, whatever their source of finance or legal status) be reported. However, data for Canada are limited to R&D activities in universities and affiliated institutions (including research hospitals) and degree-granting university colleges as data on R&D in colleges and similar institutions are not available.
- Although the OECD is working to improve the international reporting of R&D statistics, other comparability issues exist; therefore, it is important that the reader exercise caution in interpreting these statistics.

Data Sources

- *OECD StatsExtracts, Main Science and Technology Indicators database,* Organisation for Economic Co-operation and Development.
- *Gross Domestic Expenditures on Research and Development in Canada (GERD), and the Provinces and Territories,* Catalogue no. 88-221-X, December 22, 2014, Statistics Canada.
- CANSIM Table 358-0001, *Gross domestic expenditures on research and development, by science type and by funder and performer sector, annual (dollars),* data published on October 17, 2014, Statistics Canada.
- CANSIM table 358-0162, *Provincial estimates of research and development expenditures in the higher education sector, by funding sector and type of science, annual (number x 1,000,000),* data published on October 17, 2014, Statistics Canada.

D6 Educational attainment

Indicator D6 examines educational attainment among the Canadian population aged 25 to 64[9], often considered to be the "working-age" population. This indicator uses data from the **National Household Survey (NHS)** to portray the distribution of the Canadian population by level of education and age group (Table D.6.4 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld6.4-eng.htm)), and by level of education and sex (Table D.6.6 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld6.6-eng.htm)), for Canada and its jurisdictions. Information is also presented for the population aged 25 to 64 with Aboriginal identity, by age group (Table D.6.2 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld6.2-eng.htm)) and by sex (Table D.6.5 (www.statcan.gc.ca/pub/81-582-x/2015002/tbl/tbld6.5-eng.htm)). Furthermore, data from the

Labour Force Survey (LFS) are used to present data for the off-reserve Aboriginal population, the non- Aboriginal population and the total population for Canada, the provinces and the territories. (Table D.6.3 (www.statcan.gc.ca/pub/81-582-x/2015001/tbl/tbld6.3-eng.htm)).

Tables D.6.2, D.6.4, D.6.5 and D.6.6

Concepts and definitions

- The NHS variable "**Highest certificate diploma or degree**" is used to measure **educational attainment**, and is categorized as:
    - **No certificate, diploma or degree**.
    - **High school diploma or equivalent** refers to graduation from a secondary school or equivalent. It excludes persons with a postsecondary certificate, diploma or degree.
    - **Apprenticeship or trades certificate or diploma** includes trades certificates or diplomas such as pre-employment or vocational certificates and diplomas from brief trade programs completed at community colleges, institutes of technology, vocational centres, and similar institutions. Registered Apprenticeship certificate includes Certificate of Qualification, Journeyperson's designation.
    - **College, CEGEP or other non-university certificate or diploma**.
    - **University, certificate or diploma below bachelor level**. Comparisons with other data sources suggest that this category was over-reported in the National Household Survey (NHS) as it likely includes some responses that are actually college certificates or diplomas, bachelor's degrees or other types of education (e.g. university transfer programs, bachelor's programs completed in other countries, incomplete bachelor's programs, non-university professional designations). It is recommended that users interpret the results for this category with caution. For any other comments on data quality for this variable, refer to the **Education Reference Guide**, National Household Survey, Catalogue no. 99-012-X2011006.
    - **University certificate, diploma or degree at bachelor level or above**.
- Prior to 2006 in similar tables in previous editions of PCEIP, educational attainment was presented using the census concept of "highest level of schooling" and those data should therefore not be directly compared with the data presented here for "highest certificate, diploma or degree," which reflects a revision in the 2006 Census. For more information on the census education variables, refer to the **Education Reference Guide**, National Household Survey, 2011, Catalogue no. 99-012-X2011006.
- "**Aboriginal identity**" includes persons who reported being an Aboriginal person, that is, First Nations (North American Indian), Métis or Inuk (Inuit) and/or those who reported Registered or Treaty Indian status, that is registered under the Indian Act of Canada, and/or those who reported membership in a First Nation or Indian band. Aboriginal peoples of Canada are defined in the *Constitution Act, 1982*, section 35 (2) as including the Indian, Inuit and Métis peoples of Canada.
- "**Total Aboriginal identity**" includes Aboriginal group (i.e., whether the person reported being an Aboriginal person, that is, First Nations (North American Indian), Métis, or Inuk (Inuit)), multiple Aboriginal identities and Aboriginal responses not included elsewhere.
- Some Indian reserves and settlements did not participate in the 2011 National Household Survey (NHS) as enumeration was either not permitted, it was interrupted before completion, or because of natural events (e.g., forest fires). These reserves are referred to as 'incompletely enumerated reserves.' There were 36 reserves out of 863 inhabited reserves in the 2011 NHS that were incompletely enumerated. Data for these 36 Indian reserves and Indian settlements are not included in the 2011 NHS tabulations. As a result, some estimates in this document may be underestimated for First Nations people. Please refer to the reference document entitled **Aboriginal Peoples Reference Guide**, National Household Survey, Catalogue no. 99-011-X2011006, for more information on these exclusions.

Methodology

- The percentage of the population aged 25 to 64 who had attained the highest certificate, diploma or degree was obtained by dividing the number of people aged 25 to 64 who had attained the highest certificate, diploma or degree by the total number of people aged 25 to 64, then multiplying by 100.

Limitations

- To ensure the confidentiality of responses collected for the NHS, a random rounding process is used to alter the values reported in individual cells. As a result, when these data are summed or grouped, the total value may not match the sum of the individual values, since the total and subtotals are independently and randomly rounded. However, apart from discrepancies due to simple rounding, the percentages are calculated to add up to 100%, as recommended by census methodology group.

Table D.6.3

Concepts and definitions

- The **off-reserve Aboriginal population** refers to those persons who reported identifying with at least one Aboriginal group; that is, First Nations (North American Indian), Métis or Inuk (Inuit). This is based on the individual's own perception of his or her Aboriginal identity [10]
- **Educational attainment** refers to the highest level of schooling completed. For this indicator, which is based on data from the Labour Force Survey (LFS), educational attainment [10] is categorized as:
    - **Less than high school**: No education or education below high school graduation.
    - **High school**: High school graduation or some postsecondary education (not completed).
    - **Trades**: Trades certificate or diploma from a vocational school or apprenticeship training.
    - **College**: non-university certificate or diploma from a community college, CEGEP, school of nursing and similar programs at this level; university certificate below bachelor's degree.
    - **University**: bachelor's degree; university degree or certificate above bachelor's degree.

Methodology

- The **Labour Force Survey (LFS)** is a monthly household survey of a sample of individuals who are representative of the civilian, non-institutionalized population 15 years of age or older. It is conducted nationwide, in both the provinces and the territories. Excluded from the survey's coverage are: persons living on reserves and other Aboriginal settlements in the provinces; full-time members of the Canadian Forces and the institutionalized population. These groups together represent an exclusion of approximately 2% of the population aged 15 and over.
- Canada-level estimates are derived using the results of the LFS in the provinces. LFS results for the territories are not included in the national estimates, but are published separately. Difficulties exist with respect to reaching small communities in the territories, and there are areas that are excluded. As well, since the sample design, rotation pattern and reliability criteria are different from those in the 10 provinces, estimates for the territories are not included with the provincial totals, but are calculated and reported separately.
- The data presented for this indicator are based on a 12-month average from January to December.
- The percentage of the population aged 25 to 64 who had attained a specific level of education was obtained by dividing the number of people aged 25 to 64 who had completed the given level of education by the total number of people aged 25 to 64, then multiplying by 100.

Limitations

- The figures presented may not add up to totals because of rounding.
- While survey coverage in the provinces is fully representative of the working-age population, LFS coverage in the territories excludes some communities. Survey coverage in Northwest Territories is about 96%, and the Yukon has about 92% coverage. Since 2008, Nunavut's survey coverage has been approximately 92%. The northern sample includes both Aboriginal and non-Aboriginal communities, while persons living on reserves and other Aboriginal settlements are not included in the sample for the provinces.
- The data presented are not directly comparable with National Household Survey data for the Aboriginal population.
- Caution should be exercised in interpreting the provincial/territorial ratios and differences in ratios between provinces/territories and over time, as small estimates may present fairly high sampling variability. Estimates for small geographic areas, for small age groups or for cross-classified variables will be associated with larger variability.

Data Sources

- National Household Survey (NHS) 2011, Statistics Canada.
- Labour Force Survey (LFS), Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3701.

Notes

1 "Trade qualifiers (challengers)" refers to individuals who have sufficient practical work experience to meet the established criteria to attempt the certification journey level (provincial or interprovincial) examination. The criteria include relevant on-the-job experience of at least one year in excess of the apprenticeship term. This means that they did not register for or complete apprenticeship training, but they did succeed in obtaining certification within that trade.

2 "Other" consists of miscellaneous trades and occupations not classified elsewhere.

3 For information on **college enrolment,** please see the Handbook section "Postsecondary enrolment, colleges."

4 For information on **university enrolment**, please see the Handbook section "Postsecondary enrolment, universities."

5 For information on the **number of degrees, diplomas and certificates granted by colleges**, please see the Handbook section "Postsecondary completions, colleges."

6 For information on the **number of degrees, diplomas and certificates granted by universities**, please see the Handbook section "Postsecondary completions, universities."

7 The *Frascati Manual* is a document that lays out the methodology for collecting and using statistics about research and development in countries that are members of the OECD. For more information, see www.oecd.org.

8 For more detail, see *Science Statistics*, vol. 35 no. 3 (October 2011 edition), Statistics Canada Catalogue no. 88-001-X.

9 Please see *Education Indicators in Canada: An International Perspective* (www.statcan.gc.ca/olc-cel/olc.action?lang=en&ObjId=81-604-X&ObjType=2) (Statistics Canada Catalogue no. 81-604-X) for information on educational attainment in an international context. Indicator A1, "Educational attainment of the adult population", presents figures for Canada, the provinces and territories, along with the international averages provided by the Organisation for Economic Co-operation and Development. All of these data are categorized using the International Standard Classification of Education (ISECD).

10 See "Section 3: Dictionary of concepts and definitions (www.statcan.gc.ca/pub/71-543-g/2014001/part-partie3-eng.htm) " in the *Guide to the Labour Force Survey* (Statistics Canada Catalogue no. 71-543-G).

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Section E: Transitions and outcomes

E1 Transitions to postsecondary education

Participation in education

Tables E.1.1, E.1.2.1 and E.1.2.2

Indicator **E1** considers youth transitions from high school to postsecondary education. Participation rates in education, based on data from the Labour Force Survey (LFS), are presented for Canada by single age for the population aged 15 to 29 (Table E.1.1), and by age group for the populations aged 15 to 29 (Table E.1.2.1) and 18 to 34 (Table E.1.2.2) in Canada, as well as in the provinces and territories.

Concepts and definitions

- The Labour Force Survey (LFS) asks respondents about **school attendance** at a "school, college or university" in the week before the survey. Respondents are considered to be **students** if they are:
  - taking a "credit course"; that is, a course or program of instruction that could be counted towards a degree, certificate or diploma;
  - taking classroom instruction or undertaking research towards a degree, certificate or diploma;
  - taking correspondence courses that are affiliated with a school and will be counted as a credit course;
  - attending school as a student nurse (even when engaged in the practical portion of their training in a hospital setting);
  - taking a "credit course" sponsored by their employer, and the instruction is given at a public educational institution, such as a university or community college;
  - a person with a mental or physical disability who is enrolled in a special education program.
- For those who are students, information is collected on the type of school, and whether enrolment is full- or part-time, as designated by the educational establishment.
- The **participation rate in education** reflects the total enrolment in an **elementary/high school, college**, or **university** as a percentage of the total population for each age or in each age group.
- **Age** is collected for every household member in the Labour Force Survey, and information on labour market activity is collected for all persons aged 15 and over. For this indicator, the participation rate in education is presented by single age from 15 through 29 (Table E.1.1) and for the following age groups: 15 to 19; 20 to 24; and 25 to 29 (Table E.1.2.1) and 18 to 24, 25 to 29, and 30 to 34 (Table E.1.2.2).
- The **type of institution attended** captures the public and private educational establishments categorized as **elementary/high school**, **college** or **university**: elementary, junior high school, high school or equivalent; community college, junior college or CEGEP; university. Information on attendance at other types of schools, such as private institutes or vocational or secretarial schools, is also collected; however, these schools are not reflected in the totals presented in the E1 tables.

Methodology

- The **Labour Force Survey (LFS)** is a monthly household survey of a sample of individuals who are representative of the civilian, non-institutionalized population 15 years of age or older. It is conducted nationwide, in both the provinces and the territories. Excluded from the survey's coverage are: persons living on reserves and other Aboriginal settlements in the provinces; full-time members of the Canadian Forces and the institutionalized population. These groups together represent an exclusion of approximately 2% of the population aged 15 and over.

- Canada-level LFS estimates are derived using the results of the LFS in the provinces. LFS results for the territories are not included in the national estimates, but are published separately. Difficulties exist with respect to reaching small communities in the territories, and there are areas that are excluded. As well, since the sample design, rotation pattern and reliability criteria are different from those in the 10 provinces, estimates for the territories are not included with the provincial totals, but are calculated and reported separately.
- The number of students, used to calculate the participation rate, is based on a monthly average from September to April. Full- and part-time students are captured.
- Adjustments are made to LFS data every five years after new population estimates become available following the most recent census. At that time, all LFS data back to the previous census is re-weighted using the new population estimates (since the new population estimates will cover the inter-censal period between the two most recent censuses), and all corresponding historical LFS estimates are revised. Therefore, at the beginning of 2015, all estimates were adjusted to reflect 2011 Census population counts and LFS estimates have been revised back to January 2001.

Limitations

- The "type of institution attended" is based on the "kind of school" variable, where "other - specify" is an option that includes: English as a second language or French language courses that do not qualify as high school, college or university education; police academies; computer and business skills programs other than those offered by colleges or universities; culinary, hairdressing or bartending schools; and special education that focuses on community living and life skills for students with special needs.
- It is unclear where trade certificate programs are placed in the "kind of school" variable. Trade schools could be coded to the "community college, junior college, or "CEGEP" group or to "other – specify", depending on how the respondent answers the question and the interviewer's interpretation of the answer.
- Caution should be exercised in interpreting the ratios for provinces/territories and differences in ratios between provinces/territories and over time, as small estimates may present fairly high sampling variability. Estimates for small geographic areas, for small age-groups or for cross-classified variables will be associated with larger variability.

Data source

- Labour Force Survey, Statistics Canada. For more information, consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3701.

E2 Transitions to the labour market

Students and work

Tables E.2.1 through E.2.3

Indicator **E2** covers the transition from education to the labour market. Labour Force Survey (LFS) data are used to look at the extent to which students aged 15 to 29 combine school and work (Table E.2.1 and Table E.2.2). The distribution of this population group, both students and non-students, by type of institution attended, age, and labour force status is also presented (Table E.2.3).

Concepts and definitions

- The Labour Force Survey (LFS) asks respondents about **school attendance** at a "school, college or university" in the week before the survey. Respondents are considered to be **students** if they are:
    - taking a "credit course"; that is, a course or program of instruction that could be counted towards a degree, certificate or diploma;
    - taking classroom instruction or undertaking research towards a degree, certificate or diploma;
    - taking correspondence courses that are affiliated with a school and will be counted as a credit course;
    - attending school as a student nurse (even when engaged in the practical portion of their training in a hospital setting);
    - taking a "credit course" sponsored by their employer, and the instruction is given at a public educational institution, such as a university or community college;
    - a person with a mental or physical disability who is enrolled in a special education program.

- For those who are students, information is collected on the type of school, and whether enrolment is full- or part-time, as designated by the educational establishment.
- The LFS divides the population aged 15 and over into three mutually exclusive groups: **employed**, **unemployed**, and **not in the labour force**.
- **Employed** persons are those who, during the LFS reference week:
    1. did any work at all at a job or business; that is, paid work in the context of an employer–employee relationship, or self-employment. It also includes unpaid family work, which is defined as unpaid work contributing directly to the operation of a farm, business or professional practice owned and operated by a related member of the same household; or
    2. had a job but were not at work due to factors such as own illness or disability, personal or family responsibilities, vacation, labour dispute or other reasons (excluding persons on layoff, between casual jobs, and those with a job to start at a future date).
- **Unemployed** persons are those who, during the LFS reference week:
    1. were on temporary layoff during the reference week with an expectation of recall and were available for work, or
    2. were without work, had actively looked for work in the past four weeks, and were available for work, or
    3. had a new job to start within four weeks from the reference week, and were available for work.
- The remainder of the population, those neither currently supplying nor offering their labour services, are referred to as persons **not in the labour force**.
- **Age** is collected for every household member in the Labour Force Survey, and information on labour market activity is collected for all persons aged 15 and over. For this indicator, the proportion of students who were also working is presented by single age for 15 through 29 (Table E.2.1) and by three age groups: 15 to 19, 20 to 24 and 25 to 29 (Table E.2.2). The distribution of the 15- to 29-year-old population, both students and non-students, by labour force status, is presented by single age for 15 through 29, and as a total for 15 to 29 (Table E.2.3).
- The **type of institution attended** captures the public and private educational establishments categorized as **elementary/high school**, **college** or **university**: elementary, junior high school, high school or equivalent; community college, junior college or CEGEP; university; and other types of schools, such as private institutes or vocational or secretarial schools.
- **Student** and **labour force status** (Table E.2.3) are presented as:
    - **non-students**: non-student employed; non-student not in the labour force; non-student unemployed.
    - **students**: university student employed; university student not in the labour force; college student employed; college student not in the labour force; elementary/high school student employed; elementary/high school student not in the labour force; and student unemployed/other, which includes all unemployed students who attend a school institution, as well as those students for whom the type of institution was not specified, regardless of their labour force status (employed, unemployed, or not in the labour force).

Methodology

- The **Labour Force Survey (LFS)** is a monthly household survey of a sample of individuals who are representative of the civilian, non-institutionalized population 15 years of age or older. It is conducted nationwide, in both the provinces and the territories. Excluded from the survey's coverage are: persons living on reserves and other Aboriginal settlements in the provinces; full-time members of the Canadian Forces and the institutionalized population. These groups together represent an exclusion of approximately 2% of the population aged 15 and over.
- Canada-level estimates are derived using the results of the LFS in the provinces. LFS results for the territories are not included in the national estimates, but are published separately. Difficulties exist with respect to reaching small communities in the territories, and there are areas that are excluded. As well, since the sample design, rotation pattern and reliability criteria are different from those in the 10 provinces, estimates for the territories are not included with the provincial totals, but are calculated and reported separately.
- The number of students is based on a monthly average from September to April. Full- and part-time students are captured.
- Adjustments are made to LFS data every five years after new population estimates become available following the most recent census. At that time, all LFS data back to the previous census is re-weighted using the new population estimates (since the new population estimates will cover the inter-censal period between the two most recent censuses), and all corresponding historical LFS estimates are revised. Therefore, at the beginning of 2015, all

estimates were adjusted to reflect 2011 Census population counts and LFS estimates have been revised back to January 2001

Limitations

- Caution should be exercised in interpreting the ratios for provinces/territories and differences in ratios between provinces/territories and over time, as small estimates may present fairly high sampling variability. Estimates for small geographic areas, for small age-groups or for cross-classified variables will be associated with larger variability.

Data source

- Labour Force Survey, Statistics Canada. For more information consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3701.

E3 Labour market outcomes

Unemployment rates

Tables E.3.1 through E.3.3

Overall, the **E3** indicator outlines labour market outcomes. This sub-indicator presents recent and historical Labour Force Survey (LFS) data on unemployment rates by educational attainment, providing information on trends for the population aged 15 and over at the Canada level (Table E.3.1). It also provides a comparison of trends in unemployment rates by educational attainment for 25- to 29-year-olds in Canada and the provinces (Table E.3.2). Data on unemployment rates among the off-reserve Aboriginal population aged 15 and over, by educational attainment, are presented for Canada (Table E.3.3).

Concepts and definitions

- According to the Labour Force Survey (LFS), the **unemployment rate** refers to the number of unemployed persons expressed as a percentage of the labour force. The unemployment rate for a particular group (educational attainment, for example) is the number unemployed in that group expressed as a percentage of the labour force for that group.
- **Unemployed** people are those who, during the LFS reference week, were available for work and were either on temporary layoff, had looked for work in the past four weeks, or had a job to start within the next four weeks.
- Unemployment rates are presented for the following categories of **educational attainment**: all levels; less than high school; high school; college or trade; and university.
    - **Less than high school:** No education or education below high school graduation.
    - **High school:** High school graduation or some postsecondary education (not completed).
    - **College or trade:** trade certificate or diploma from a vocational school or apprenticeship training; non-university certificate or diploma from a community college, CEGEP, school of nursing and similar programs at this level; university certificate below bachelor's level.
    - **University:** bachelor's degree or university degree/certificate above bachelor's level.
- The **off-reserve Aboriginal population** refers to individuals who reported being an Aboriginal person; that is, First Nations (North American Indian), Métis or Inuk (Inuit). In the LFS, a person may report more than one Aboriginal group; for example, a respondent could report being both First Nations and Métis.[1]

Methodology

- The **Labour Force Survey (LFS)** is a monthly household survey of a sample of individuals who are representative of the civilian, non-institutionalized population 15 years of age or older. It is conducted nationwide, in both the provinces and the territories. Excluded from the survey's coverage are: persons living on reserves and other Aboriginal settlements in the provinces; full-time members of the Canadian Forces and the institutionalized population. These groups together represent an exclusion of approximately 2% of the population aged 15 and over.
- Canada-level estimates are derived using the results of the LFS in the provinces. LFS results for the territories are not included in the national estimates, but are published separately. Difficulties exist with respect to reaching small communities in the territories, and there are areas that are excluded. As well, since the sample design, rotation pattern and reliability criteria are different from those in the 10 provinces, estimates for the territories are not included with the provincial totals, but are calculated and reported separately.
- The LFS unemployment rate is based on a monthly average from January to December.

- Starting in late 2003 in Alberta, and then in April 2004 for the rest of Western Canada, the LFS added questions to identify Aboriginal respondents living off-reserve with the goal of producing provincial labour market statistics on the Aboriginal population. The Aboriginal identity questions were also asked in the territories in 2004. As of January 2007, the question on Aboriginal identity was extended to all provinces. Labour market data for the Aboriginal population have been available for all provinces since the fall of 2008.
- As of January 2015, Labour Force Survey (LFS) estimates reflect population counts based on the 2011 Census. LFS data for 2001 through 2014 have been revised based on these modifications. For more information, please see Improvements to the Labour Force Survey (LFS): The 2015 Revisions of the Labour Force Survey (LFS), Statistics Canada Catalogue no. 71F0031X.

Limitations

- Indian reserves have historically been excluded from the LFS due to the serious challenges in contacting and interviewing potential respondents, with many of them living in remote locations not easily accessible to LFS interviewers given the short data collection period each month, and the large effort and cost associated with traveling to these locations.
- Caution should be exercised in interpreting the provincial ratios and differences in ratios between provinces and over time, as small estimates may present fairly high sampling variability. Estimates for small geographic areas, for small age-groups or for cross-classified variables will be associated with larger variability.

Data source

- Labour Force Survey, Statistics Canada. For more information consult "Definitions, data sources and methods", Statistics Canada Web site, survey 3701.

Notes

1 See "Section 3: Dictionary of concepts and definitions (www.statcan.gc.ca/pub/71-543-g/2014001/part-partie3-eng.htm) " in the *Guide to the Labour Force Survey* (Statistics Canada Catalogue no. 71-543-G).

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Appendix 1: Structure of education and training in Canada

In Canada, education is the responsibility of the 10 provinces and 3 territories. While educational structures and institutions across the country are similar in many ways, they have been developed by each jurisdiction to respond to the particular circumstances, geographical situation, and historical and cultural heritage of the populations they serve. This appendix describes the various structures and organization of education and training in Canada.

Pre-elementary programs

Pre-elementary programs—pre-Grade 1 education offered by public, private, and federal schools, as well as schools for the visually and hearing impaired—are available to young children, typically 4 or 5 years of age, in all jurisdictions.

Most jurisdictions offer one year of public pre-elementary programs, with Quebec, Ontario, Manitoba, Saskatchewan, and Alberta offering additional years (Figure 1 (www.statcan.gc.ca/pub/81-582-g/2017001/c-g/c-g1-eng.htm)). In most jurisdictions, pre-elementary programs in the year before Grade 1 are offered to children who turn 5 years of age by a certain date in the school year as specified in jurisdictional legislation. Attendance in these programs is optional in most jurisdictions, although it is mandatory in Nova Scotia and New Brunswick. The intensity of these programs varies; some jurisdictions offer full-day programs, some offer half-day programs, and some offer both.

In Quebec, one additional year of publicly funded pre-elementary programming is available to some 4-year-olds who have disabilities or who are from low-income families. In Ontario, the provision of an additional year of pre-elementary for 4-year-olds is dependent on the choice of the local school board, and funding is provided by the Ministry of Education. In Ontario, all school boards offer this program for their students. In Manitoba, one additional year of pre-elementary programming is offered at the discretion of each school division, and two school divisions currently provide this program, which is not funded by the Department of Education. In Saskatchewan, two additional years of pre-elementary programming are funded in schools in communities where a significant portion of pre-school children are not ready to participate fully in the learning opportunities offered to kindergarten and Grade 1 students. These programs are not mandatory and are not universal. Alberta also offers two additional fully funded years of pre-elementary programming, targeted to students with disabilities or to those who are considered talented or gifted.

In addition to publicly provided programs, in all jurisdictions, some private schools also offer one or more year(s) of pre-elementary programming. Private day-care programs or early childhood education programs, however, are not offered as part of the formal education systems and are not included in the data on pre-elementary programs.

Elementary and secondary education

Public education is provided free to all Canadian citizens and permanent residents until the end of secondary school, which normally occurs at age 18. The ages for compulsory schooling vary from one jurisdiction to another. Generally, schooling is required from age 6 or 7 as of a certain date as specified in jurisdictional legislation (age 5 in New Brunswick and British Columbia) to age 16. In New Brunswick, Ontario, Manitoba and Nunavut, schooling is compulsory to the age of 18 or until high school graduation.

In most jurisdictions, elementary-secondary education consists of 12 years of study, Grades 1 through 12 (Figure 1 (www.statcan.gc.ca/pub/81-582-g/2017001/c-g/c-g1-eng.htm)). The only exception is Quebec, where the elementary-secondary system has 6 years of elementary school and 5 years of secondary school. Following a major change in policy,

2002/2003 was the last year for Grade 13 in Ontario. One immediate consequence of this change was the "double cohort" of students who entered the postsecondary system in 2003/2004 (comprising the last graduating class from the old system and the first graduating class from the new system).

The elementary-secondary continuum reflects different grade combinations in different jurisdictions, thus the point of transition between elementary and secondary school varies.

The organization of grades also varies by jurisdiction and can further vary at the local level within a jurisdiction. Elementary schools cover the first four to eight years of compulsory schooling. Afterwards, children may proceed to a middle school or to a junior high or intermediate school; these usually cover Grade 6 or 7 to Grade 8 or 9, or they may go directly to a secondary education program. In many northern and rural communities, one school building may house all levels, from kindergarten to Grade 11 or 12.

Depending on the jurisdiction, a variety of programs —vocational (job-training) as well as academic—is offered at the secondary level. Some jurisdictions offer dual credit courses that simultaneously give students both high school and postsecondary credits.

Secondary school diplomas are granted to students who pass the compulsory and optional courses of their programs.

Public funding at the pre-elementary and elementary-secondary levels is provided either directly via the provincial or territorial government or through a mix of provincial/territorial transfers and local taxes collected by the local government or by school boards that have the power to impose taxes. Private school funding comes primarily from fees and endowments, except in Quebec, which also provides funds for private schools (which have discretion over admission criteria). Manitoba and Alberta provide some provincial funding to private schools that meet specified provincial requirements. The federal government pays the tuition fees for Aboriginal children and for children of its employees who live on Federal Crown lands (e.g., National Defence, Agriculture and Agri-Food Canada, and Transport Canada).

Postsecondary education

Once secondary school has been successfully completed, students may apply to college or university programs. Traditionally, enrolment in trade-vocational programs, such as apprenticeship or other programs geared towards preparation for employment in an occupation or trade, did not require graduation from secondary school. However, requirements have been evolving so that more and more programs, especially in trades dealing with advanced technology or having implications for public safety, now require high school graduation.

Apprenticeship training involves a contract between an apprentice and an employer, registered with the jurisdiction, in which the employer provides the apprentice with training and experience for a trade. Programs vary in length from two to five years, depending on the trade. Registered apprenticeship combines on-the-job experience with four- to eight-week periods of in-class training each year of the program. In most jurisdictions, the in-class portion is usually taken at a postsecondary institution during the apprenticeship training. However, in Quebec, the in-class training is taken prior to beginning an apprenticeship program.

There are over 200 registered trades in Canada, each with specific standards and training requirements outlined by each jurisdiction. In some of these trades, apprenticeship training and certification is compulsory to enter into and to practice the trade. In others, apprenticeship certification is not necessary, although an individual may voluntarily obtain it to indicate a certain level of competence in the trade. Compulsory and voluntary trades vary by jurisdiction; however, there are similarities across jurisdictions in that compulsory trades commonly include those with advanced technology or that involve public safety. As of 2009, the provinces and territories had agreed on interprovincial standards for 50 of the registered trades. In these 50 trades, candidates who achieve an agreed-upon standard qualify for a Red Seal endorsement and are allowed to work anywhere in Canada without further training or examination.

In Quebec, data relating to trade-vocational programs that are administered at the secondary level are reported at that level.

Postsecondary education is available in both government-supported and private institutions, some of which award degrees. A major distinction at an institutional level across all jurisdictions is made between "degree-granting" and "non-degree-granting" institutions. Degree-granting institutions—both public and private—have authority under provincial legislation to grant degrees, and include universities, university colleges, and some community colleges.

Universities typically offer four-year undergraduate programs leading to bachelor's degrees. Advanced degrees include master's degrees, generally requiring two years of study after a first degree, and doctoral degrees, which require three to five years of postgraduate study and research as well as a dissertation. Not all universities offer advanced degrees, particularly at the doctoral level. In addition to universities, university colleges are recognized degree-granting institutions that offer three- to four-year bachelor's programs. Both universities and university colleges also offer programs leading to diplomas and certificates, but the primary emphasis is on degree programs. A number of jurisdictions have also begun to give limited degree-granting authority to community colleges. These institutions, which still offer diploma and certificate programs, may also offer two-year associate degrees or three- to four-year applied degrees in an area of specialty particular to the institution.

A university or other institution may also be affiliated or federated with another university. Federated institutions are degree-granting institutions responsible for their own administration; however, under the federation agreement, the granting of degrees rests with the parent institution. Affiliated institutions have limited or no degree-granting authority, and the granting of degrees rests with the parent institution. A number of colleges have the authority to offer divinity degrees, but these colleges are not fully recognized as degree-granting institutions.

While the majority of degree-granting institutions are public, private institutions exist in a number of provinces. For many years, some private institutions have offered programs in divinity. Furthermore, private institutions that offer degree programs in liberal arts, business, and trades have become more common.

For the most part, the systems of public non-degree-granting institutions in Canada were created by provincial and territorial governments in the 1960s to provide labour market preparation programs as alternatives to the more theoretically oriented programs of universities. Depending on the province or territory, they are called colleges, regional colleges, centres, colleges of applied arts and technology, community colleges, institutes, schools, or, in Quebec, collèges d'enseignement général et professionnel (CEGEPs).

Public non-degree-granting institutions offer vocationally oriented programs in a wide range of semi-professional and technical fields, leading to diplomas and certificates and, in the case of Quebec, to diplomas and attestations. Diplomas are generally granted for successful completion of two- and three-year programs (three year programs in Quebec), while certificate programs usually take up to one year. In Quebec, attestations are awarded for the completion of shorter technical programs, and are generally viewed as the equivalent to certificates awarded in other jurisdictions.

In Quebec, students wishing to go on to university are generally required to successfully complete a two-year pre-university program offered by CEGEPs. In some circumstances, students with a technical-stream CEGEP diploma of college studies may undertake university studies.

Several college systems offer university transfer programs, typically the first two years of a university undergraduate program. These transfer programs are usually offered in conjunction with a university, where the remainder of the program would be completed.

Private non-degree-granting institutions are subject to varying degrees of government regulation and can be classified in terms of the extent of government oversight. "Recognized institutions" are those that have been given authority to grant academic credentials by provincial or territorial governments through charters or legislation that provide mechanisms to ensure institutional and program quality. "Non-recognized, but licensed, institutions" are primarily monitored by governments with a view to consumer protection rather than institutional or program quality. Finally, "non-recognized, non-licensed institutions" are private institutions that are not regulated by government.

Private non-degree-granting institutions may be called "colleges", "institutes", "schools", or "academies" depending on the jurisdiction. Credentials issued include diplomas and certificates, and these programs tend to be much shorter and more intensive than programs in public institutions. In Quebec, private subsidized institutions may also offer two-year pre-university programs and three-year technical programs.

The source of funds at the postsecondary level will depend on the nature of the institution. For universities and public non-degree granting institutions, public funding comes directly from the provincial/territorial government (mostly in the form of operating and capital grants) and from the federal government (mostly for sponsored research). Private funding for those institutions is made up of tuition and other fees, donations (including bequests), investment, and non-government grants and contracts. Private non-degree-granting institutions receive very little or no public funding, except indirectly through support to

students; funding for these private institutions comes mostly from tuition fees.
For a more detailed overview of postsecondary systems in Canada, see the Web site of the Canadian Information Centre for International Credentials (www.cicic.ca).

Figure 1 Levels within pre-elementary and elementary-secondary schools, by jurisdiction (www.statcan.gc.ca/pub/81-582-g/2017001/c-g/c-g1-eng.htm)

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Figure 1
Levels within pre-elementary and elementary-secondary schools, by jurisdiction

1. Prince Edward Island introduced its pre-elementary program in 2000/2001.
2. 2002/2003 was the last year for the Ontario Academic Course (Grade 13).

Notes : The elementary-secondary continuum reflects different grade combinations in different jurisdictions, thus the point of transition between elementary and secondary school varies. The organization of grades also varies by jurisdiction and can further vary at the local level within a jurisdiction. After elementary school, children may proceed to a middle school or to a junior high or intermediate school, or they may go directly to a secondary education program.

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Education Indicators in Canada: Handbook for the Report of the Pan-Canadian Education Indicators Program March 2017

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